Service Manual

TOP NEXT

ORDER NO. KM49810322C1

F12

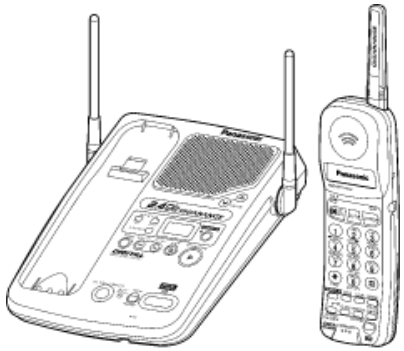
Telephone Equipment

KX-TGM240-B

2.4GHz Cordless Answering System

Black Version

(for U.S.A.)



SPECIFICATIONS

	Base Unit	Handset
Power Source:	AC Adaptor (KX-A11-6)	Rechargeable Ni-MH battery
Receiving Frequency:	32 channels within 909.64~920.8 MHz	32 channels within 2.40208~2.48144 GHz
Receiving Method:	Double super heterodyne	Double super heterodyne
Transmitting Frequency:	32 channels within 2.40208~2.48144 GHz	32 channels within 909.64~920.8 MHz
Oscillation Method:	PLL synthesizer	PLL synthesizer
Detecting Method:	Quadrature Discriminator	Quadrature Discriminator
Tolerance of OSC Frequency:	±3.6 kHz	±3.6 kHz
Modulation Method:	F3 (frequency modulation)	F3 (frequency modulation)
ID Code:	20-bit	20-bit
Greeting Message and Incoming Message:	Total recording time is about 16 minutes	
Dial Mode:		Tone (DTMF)/Pulse
Redial:		Up to 30 digits
Speed Dialer:		Up to 16 digits
Power Consumption:		14 days at Standby, 4.5 hours at Talk
Dimension (H × W × D):	2 3/16" × 7 5/8" × 8 7/16" (56 × 194 × 214 mm)	9 13/16" × 2 3/16" × 1 9/16" (249 × 55.5 × 40 mm)
Weight	1.29 lbs. (580 g)	0.53 lbs. (240g) with battery

Design and specifications are subject to change without notice.

Panasonic

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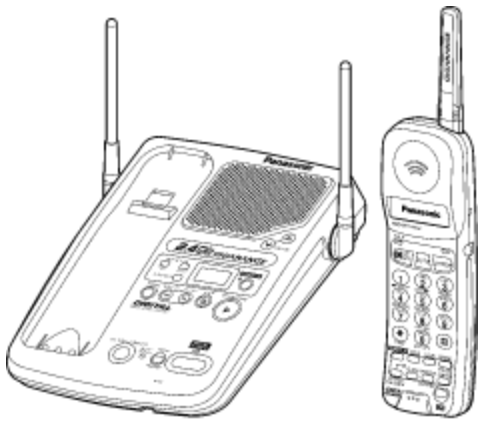

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Design and specifications are subject to change without notice.

Panasonic

TOP NEXT

1 STANDARD BATTERY LIFE

If your Panasonic battery is fully charged;

While in use (TALK)	near the base unit*	8–9 hours
	away from the base unit	3–4 hours
While not in use (Stand-By)		14 days

*Whithin about 10 feet (3 m)

Battery life may vary depending on usage conditions and ambient temperature.

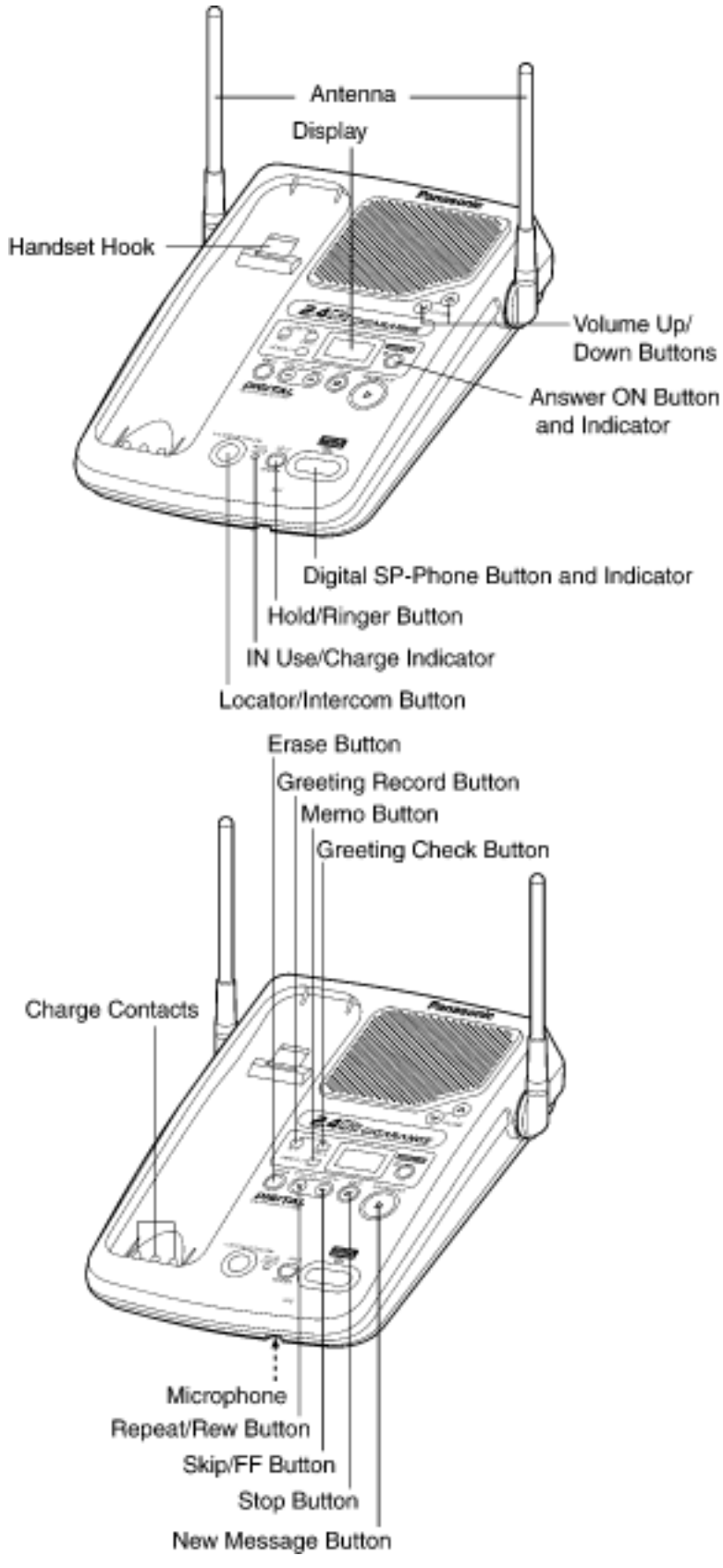
Clean the handset and the base unit charge contacts with a soft dry cloth once a month. Clean more often if the unit is subject to grease, dust or high humidity. If not, the battery may not charge properly.

If the battery is fully charged, you do not have to place the handset on the base unit until the RECHARGE indicator flashes. This will maximize the battery life.

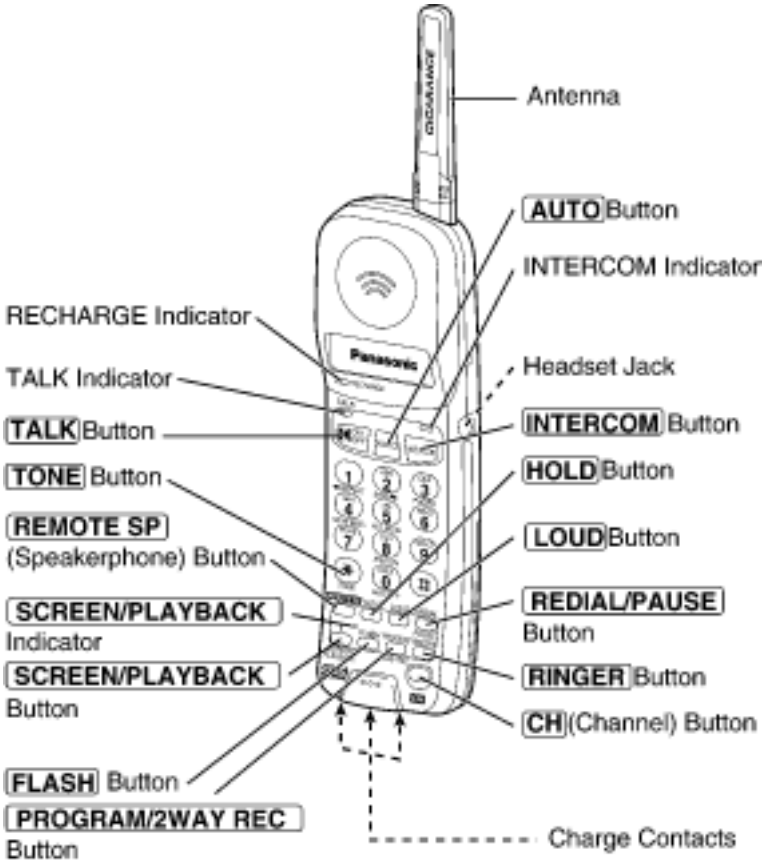
The battery cannot be overcharged.

2 LOCATION OF CONTROLS

(Base Unit)

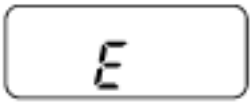


(Handset)

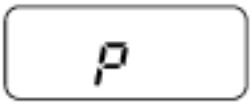


(Base Unit Display)

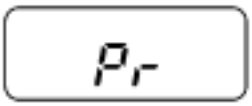
The clock needs adjusting.



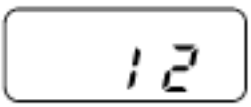
Your message was not recorded correctly. Record it again.



The unit is in programming mode.

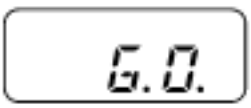


A pre-recorded message is being played.



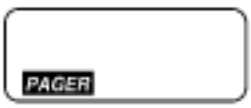
12 messages have been recorded.

Memory is full. Erase some or all of the messages.

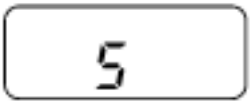


The recording time is set to " greeting only ".

The base unit ringer volume is set to OFF.



The pager call mode is set to ON.



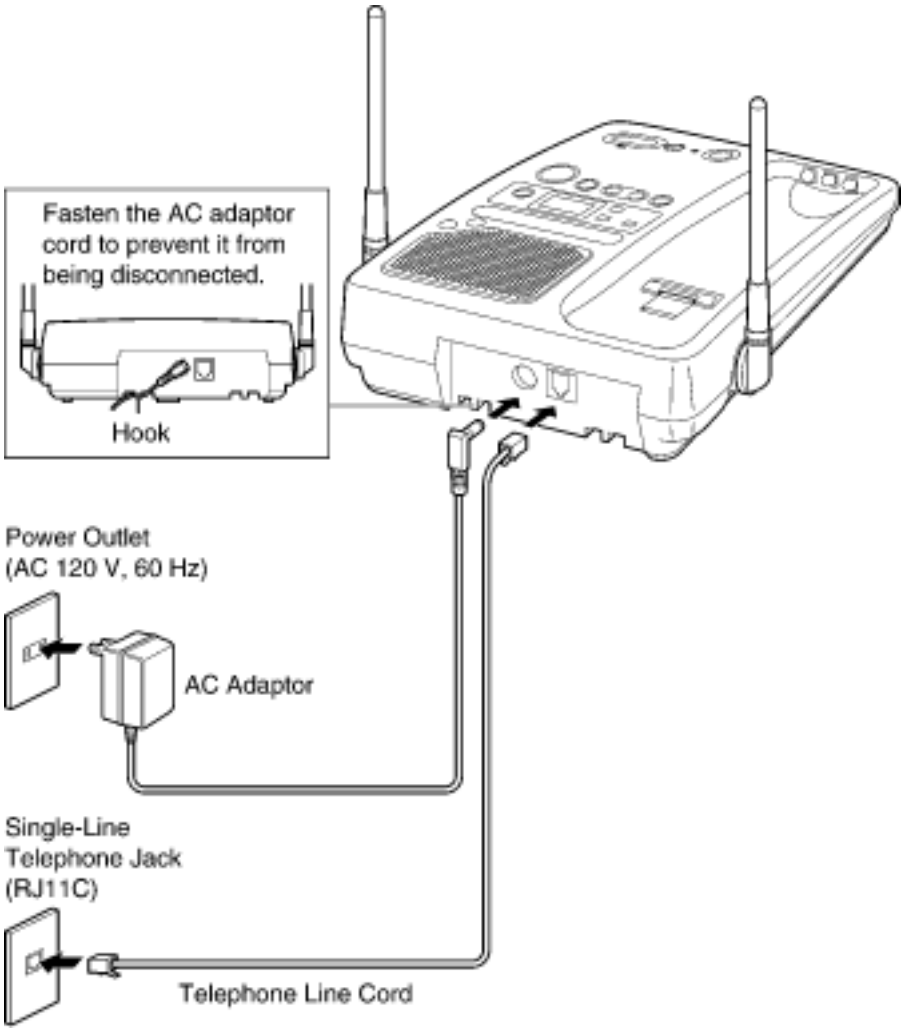
The speaker volume level is set to " 5 ". You can select:

- 9 levels (0 – 8) while using the answering system.
- 8 levels (1 – 8) while using the speakerphone.

TOP PREVIOUS NEXT

3 CONNECTION TO A TELEPHONE LINE

TOP PREVIOUS NEXT



This connection is for U.S.A. version only.

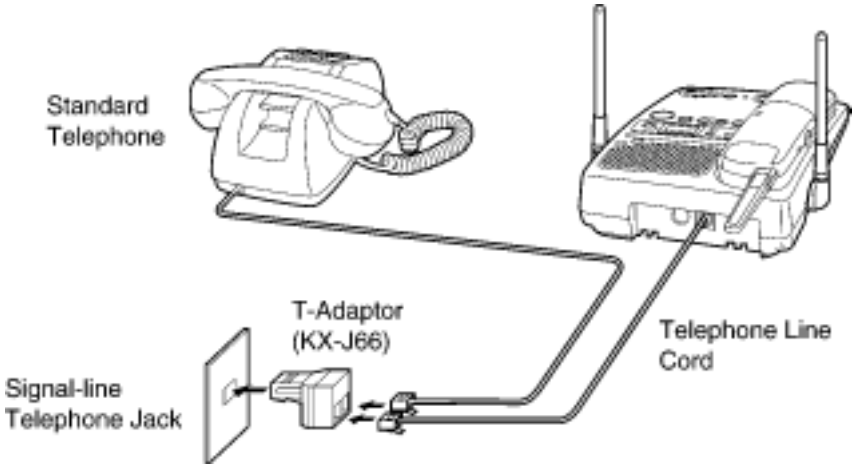
Refer to the simplified manual (cover) for Canada or other areas.

Notes:

USE ONLY WITH Panasonic AC ADAPTOR KX-A11-6

The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)

(Adding another phone)



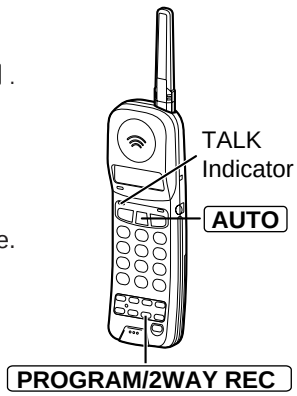
TOP PREVIOUS NEXT

4 NEW OPERATION

NEW OPERATION

Selecting the Dialing Mode

You can program the dialing mode **by using the handset near the base unit**. If you have touch tone service, set to TONE.
If rotary or pulse service is used, set to PULSE.
Your phone comes from the factory set to TONE.
The TALK and DIGITAL SP-PHONE indicator lights must be off before programming.



1 Press **PROGRAM/2WAY REC** .
- The TALK indicator flashes.

2 Press **AUTO**.

3 To select PULSE, press # twice.
OR
To select TONE, press * twice.

4 When finished, press **PROGRAM/2WAY REC** .
- A confirmation tone sounds.*

- To cancel during programming, press **PROGRAM/2WAY REC** , then start from step1.
- If 3 beeps sound during programming, a wrong key was pressed. Restart from step 1.

***What the confirmations tone means**
1 beep: The mode is different from the previously selected one.
2 beep: The mode is the same as the previously selected one.

If a power failure occurs, the mode will return to the factory preset (TONE). Reprogram if necessary.

Selecting the Ringer Volume

with the handset

- **To select HIGH (preset) or LOW,** press **RINGER** briefly. (Each time you press the button briefly, the selected volume will ring and the ringer volume will change.)
- **To turn the ringer OFF**, press and hold **RINGER** until 2 beeps sound.
- **To turn the ringer ON**, press **RINGER** briefly. The ringer will sound at the HIGH level.

With the base unit

The DIGITAL SP-PHONE indicator light must be off.

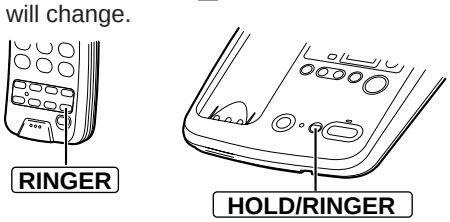
- **To select HIGH (preset) or LOW**, press **HOLD/RINGER** briefly. (Each time you press the button briefly, the selected volume will ring and the ringer volume will change.)
- **To turn the ringer OFF**, press and hold **HOLD/RINGER** until 2 beeps sound. " ***RINGER OFF*** " will be displayed.
- **To turn the ringer ON**, press **HOLD/RINGER** briefly. The ringer will sound at the HIGH level.

Selecting the Handset Ringer Tone
(2 Types)

The TALK indicator light must be off.

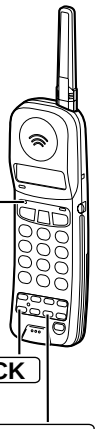
1 Press **RINGER**.

2 Press * within 5 seconds.
- The selected ringer tone will sound.
- Each time you press * within 5 seconds, the ringer tone will change.



Time and Day Adjustment

Voice Time/Day Stamp: During playback, a synthesized voice will announce the time and day when each message was recorded.



1 Press **PROGRAM/2WAY REC** .
- The TALK indicator flashes.

2 Press **SCREEN/PLAYBACK** .
- The indicator lights.
- " P " is displayed on the base unit.

3 Press 0 .
- " ◴ " is displayed.
- " Set time " is announced.
The time/day will be heard if it was adjusted beforehand.

4 Enter the current time (hour and minute) by using a 4-digit number.

(Ex. To set 9:30, enter " 0930 ".)
- The unit announces the time.
- The entered number is displayed.

5 Press * to select " AM " or " PM ".
Press # repeatedly to set the day.

6 When finished, press **PROGRAM/2WAY REC** .
- The unit announces the time/day.
The clock starts working.

- In step 4, you cannot enter numbers greater than 12. **Do not use military time**. (To set 13:00 hours, enter "0100" and select " PM " by pressing * .)
- The accuracy of the clock is approximately ±**45 seconds a month at room temperature**.

To check the time/day

Press **PROGRAM/2WAY REC**
➡ **SCREEN/PLAYBACK** ➡ 0.
- The current time/day is heard.
When finished, press **PROGRAM/2WAY REC**.

Selecting the Caller's Recording Time

You may select the caller's recording time as either "1 minute", "unlimited" or "greeting only ".
Your phone comes from the factory set to " unlimited ".

1 Press **PROGRAM/2WAY REC**.
- The TALK indicator flashes.

2 Press **SCREEN/PLAYBACK**.
- The indicator lights.
- " P " is displayed on the base unit.

3 Press **5**.
- The current setting is displayed.
  1: 1 minute
  2: unlimited (factory preset)
  3: greeting only

4 Press **1**, **2** or **3** to select the recording time.
- The setting is displayed.

5 When finished, press **PROGRAM/2WAY REC**.
- The indicator lights go out.

If you select " greeting only ", the unit will answer a call with the greeting message, and then hang up. The unit will not record any incoming messages.

Selecting the Number of Rings

You may select the number of rings before the answering system answers a call, from " 1 " to " 7 " or " AUTO (for Toll Saver)". Your phone comes from the factory set to " AUTO ".

1 Press **PROGRAM/2WAY REC**.
- The TALK indicator flashes.

2 Press **SCREEN/PLAYBACK**.
- The indicator lights.
- " P " is displayed on the base unit.

3 Press **2**.
- The current setting is displayed.

4 Press a dialing button **0** to **7** to set the number of rings.
  0: Selects " AUTO ". "A" is displayed.
  1 – 7: The unit will answer after the selected number of rings.

5 When finished, press **PROGRAM/2WAY REC**.
- The indicator lights go out.

Setting the CPC (Calling Party Control) Function

The CPC function is preset to " A ". If you use a call waiting service, set to " b ", or the call waiting tone will disconnect someone leaving a message.

1 Press **PROGRAM/2WAY REC**.

2 Press **SCREEN/PLAYBACK**.

3 Press **3**.
- The current setting, " A " or " b ", is displayed on the base unit.

4 To select " b ", press **2**.
OR
To select " A ", press **1**.
- The setting is displayed.

5 When finished, press **PROGRAM/2WAY REC**.

Setting the Greeting Monitor Function

When your greeting message is being played to the caller, you can also listen to it through the base unit speaker. To listen to your greeting , set to " 2 (ON) ". Your phone comes from the factory set to " 1 (OFF) ".

1 Press **PROGRAM/2WAY REC**.

2 Press **SCREEN/PLAYBACK**.

3 Press **4**.
- The current setting, " 1 " or " 2 ", is displayed on the base unit.

4 To select " 2 (ON) ", press **2**.
OR
To select " 1 (OFF) ", press **1**.
- The setting is displayed.

5 When finished, press **PROGRAM/2WAY REC**.

5 DISASSEMBLY INSTRUCTIONS

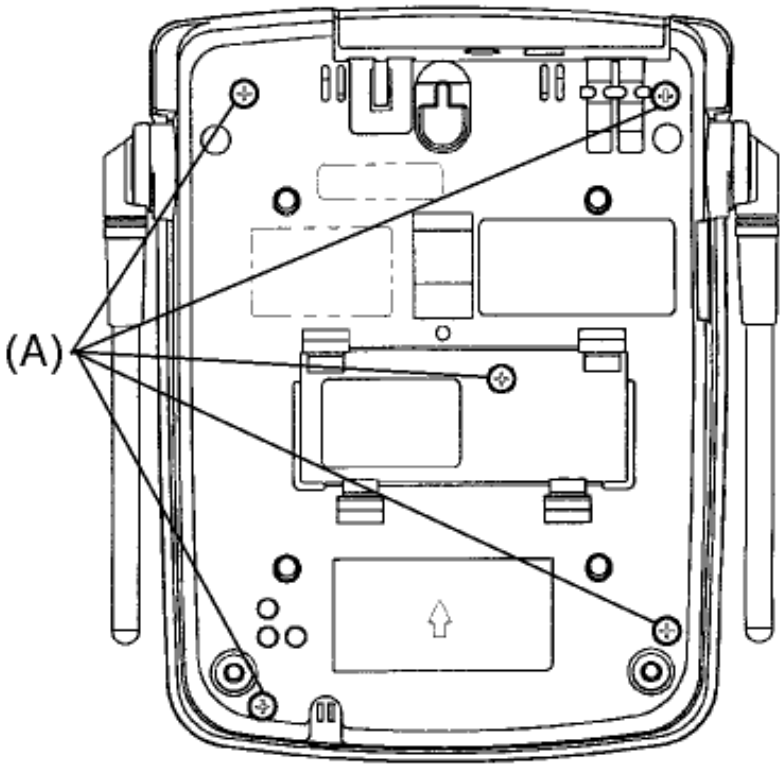


Fig. 1

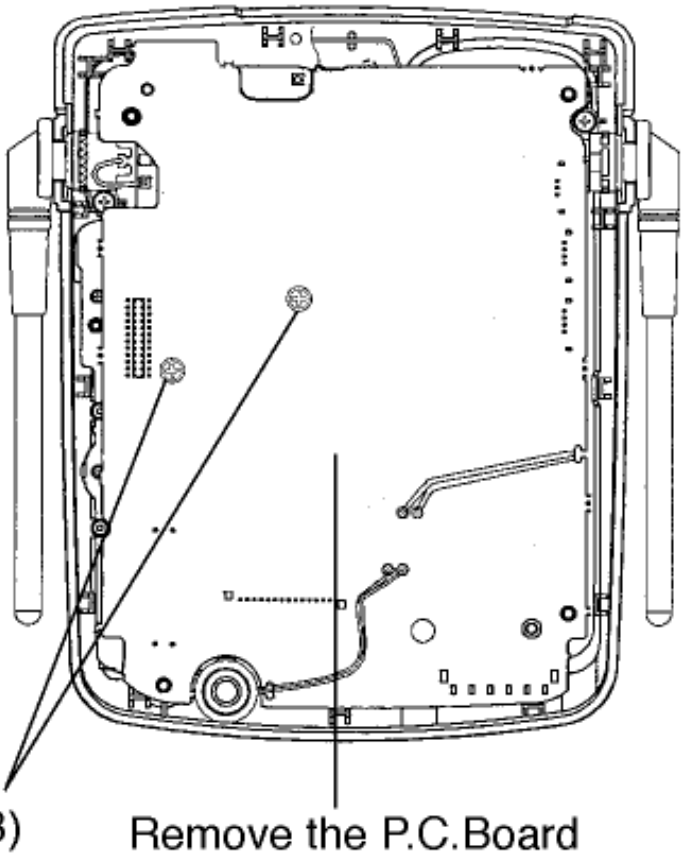


Fig. 2

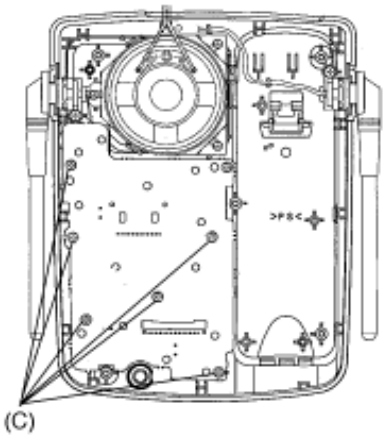


Fig. 3

Fig. 4

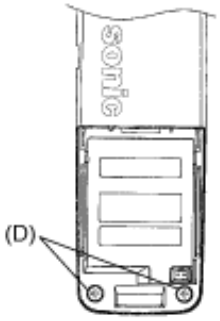


Fig. 5

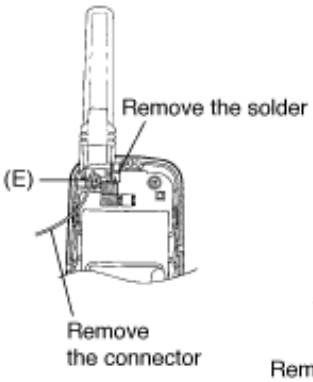


Fig. 6

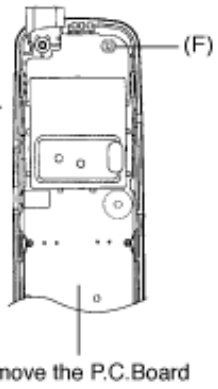


Fig. 7

Ref. No.	Procedure	Shown in Fig.-	To remove-.	Remove-.
1	1	1	Lower Cabinet	Screws (3 x 14) (A) x 5
2	1, 2	2	Main P.C. Board	Remove the P.C.Board
3	1~3		RF Unit	Screws (2.6 x 8) (B) x 2
4	1~4	3	Operation P.C. Board	Screws (2.6 x 10) (C) x 7
5	5	4	Battery Cover	Remove the Battery Cover
6	5, 6	5	Rear Cabinet	Screws (2.6 x 12) (D) x 2
7	5~7	6	Antenna	Screws (2.6 x 12) (E) x 1
8	5~8	7	Main P.C. Board	Screws (2.6 x 12) (F) x 1

TOP PREVIOUS NEXT

6 HOW TO REPLACE FLAT PACKAGE IC

TOP PREVIOUS NEXT

6.1 Preparation

6.2 Procedure

6.3 Modification Procedure of Bridge

TOP PREVIOUS NEXT

6.1 Preparation

SOLDER

Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA

Soldering iron

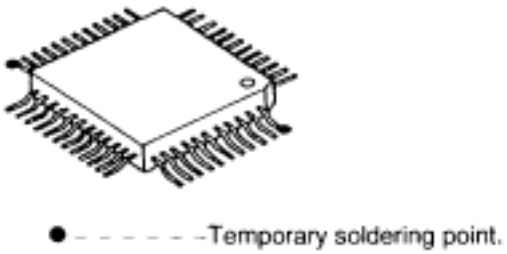
Recommended power consumption will be between 30 W to 40 W./Temperature of Copper Rod between 662± 50°F (350± 10°C)/(An expert may handle between 60 W to 40 W iron, but beginner might damage foil by overheating.)

Flux/HI115 Specific gravity 0.863/(Original flux will be replaced daily.)

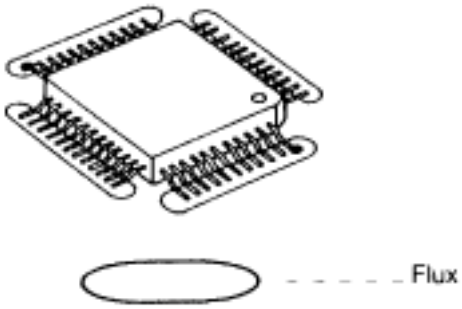
6.2 Procedure

1. Temporary fix FLAT PACKAGE IC by soldering on two marked 2 pins.

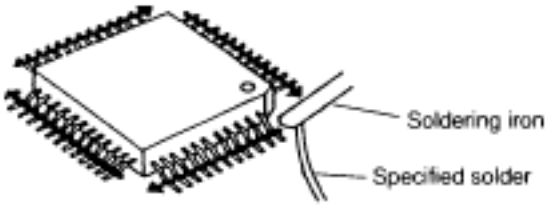
   *Most important matter is accurate setting of IC to the corresponding soldering foil.



2. Apply flux for all pins of FLAT PACKAGE IC.



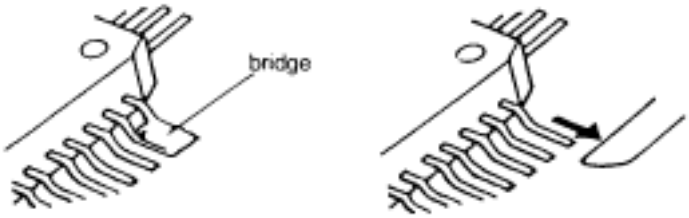
3. Solder employing specified solder to direction of arrow, as sliding the soldering iron.



6.3 Modification Procedure of Bridge

1. Re-solder slightly on bridged portion.

2. Remove remained solder along pins employing soldering iron as shown in below figure.



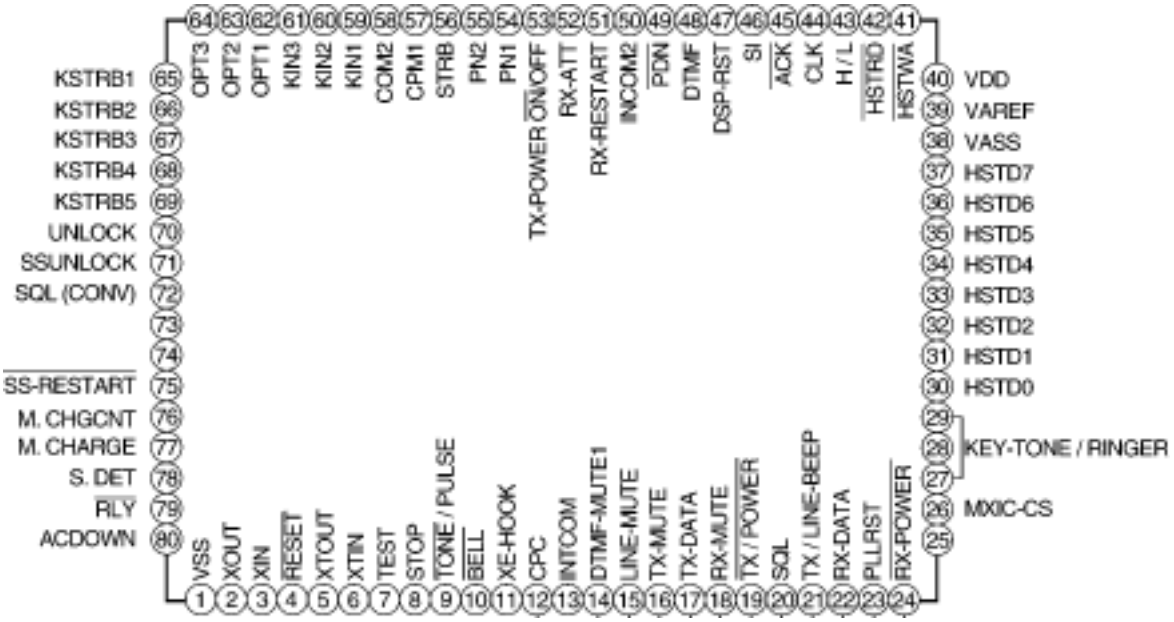
7 CPU DATA (Base Unit)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

7.1 IC201 PQVI53MF5020

TOP PREVIOUS NEXT



Pin No.	Description	I/O	High	Low	High-Z
1	VSS	-	-	GND	-
2	XOUT	O	-	-	-
3	XIN	I	-	-	-
4	$\overline{\text{RESET}}$	I	Normal	RESET	-
5	XTOUT	O	-	-	-
6	XTIN	O	-	-	-
7	TEST	I	-	GND	-
8	STOP	I	-	STOP	-
9	TP	I	Pulse	Tone	
10	$\overline{\text{BELL}}$	I		BELL	-
11	EXHOOK	I	EXHOOK		
12	CPC	I	CPC		
13	INTERCOM (RX)	O	INT' COM	MUTE	
14	DTMFMUTE1	O	UNMUTE	MUTE	
15	LINE MUTE	O	MUTE	UNMUTE	
16	TXMUTE	O	MUTE	UNMUTE	-
17	TXDATA	O	-	-	-
18	$\overline{\text{RXMUTE}}$	O	MUTE	UNMUTE	-
19	$\overline{\text{TXPOWER}}$	O	-	ON	OFF
20	SQLCH	I	Disable	Enable	-
21	TX BEEP	O	-	-	-
22	RXDATA	I	-	-	-
23	$\overline{\text{PLLST}}$	O	Normal	Active	-
24	RXPOWER	O	-	ON	OFF
25	DTMFMUTE2	O	MUTE	UNMUTE	-
26	$\overline{\text{MXIC-CS}}$	I		Active	-
27	KTONE/RINGER	O	Active	Normal	-
28	BEPCTL1	O	-	LOW	HIGH
29	BEPCTL2	O	-	LOW	HIGH
30	D0	I/O	-	-	-
31	D1	I/O	-	-	-
32	D2	I/O	-	-	-
33	D3	I/O	-	-	-
24	D4	I/O	-	-	-
35	D5	I/O	-	-	-
36	D6	I/O	-	-	-
37	D7	I/O	-	-	-
38	VASS	-	-	GND	-
39	VAREF	-	VDD	-	-
40	VDD	-	VDD	-	-

Pin No.	Description	I/O	High	Low	High-Z
41	$\overline{\text{HSTWR}}$	O	-	Write	-
42	$\overline{\text{HSTRD}}$	O	-	Read	-
43	HI/$\overline{\text{LO}}$	O	HIGH	LOW	-
44	CPS/CLOCK	O	-	-	-
45	$\overline{\text{DPS-ACK}}$	O	Active	Normal	-
46	SI	O	-	-	-
47	DRST	O	Reset	-	-
48	DTMF	O	Active	Normal	-
49	$\overline{\text{DPS-PDN}}$	O	-	Power Down	-
50	INTERCOM (TX) TOUT	O	MUTE	INT' COM	-
51	RX-RESTART	O	RESET	Normal	-
52	RX-ATT	O	-	OFF	ON
53	TX-POWER $\overline{\text{ON}}$/OFF	O	-	SUPER LOW	NORMAL
54	PN 1	O	-	-	-
55	PN 2	O	-	-	-
56	STROBE (MC4094)	O	Strobe On	Strobe Off	-
57	COM1	O	-	-	1/2VDD
58	COM2	O	-	-	1/2VDD
59	KEY IN	O	OFF	ON	-
60	KEY IN	I	OFF	ON	-
61	KEY IN	I	OFF	ON	-
62	OPT IN	I	OFF	Option	-
63	OPT IN	I	OFF	Option	-
64	OPT IN	I	OFF	Option	-
65	KEY/OPT STROBE	O	Strobe Off	Strobe On	-
66	KEY/OPT STROBE	O	Strobe Off	Strobe On	-
67	KEY/OPT STROBE	O	Strobe Off	Strobe On	-
68	KEY/OPT STROBE	O	Strobe Off	Strobe On	-
69	KEY/OPT STROBE	O	Strobe Off	Strobe On	-
70	PLL-UNLOCK	I	Unlock	Lock	-
71	SS-UNLOCK	I	Lock	Unlock	-
72	SQL (CONV)	I	Electric field	NONE	-
73	Not Used	I	-	Fixed	-
74	Not Used	I	-	Fixed	-
75	SS-$\overline{\text{RESTART}}$	O	-	RESET	Normal
76	CHARGE CTL	O		TRICKLE	ULTRA
77	CHARGE	I	Non Charge	Charge	-
78	SHORT DET	I	SHORT	Normal	-
79	$\overline{\text{RLY}}$	O		ON	OFF
80	ACDOWN	I	OFF	ON	-

TOP PREVIOUS NEXT

8 CPU DATA (RF Unit)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

8.1 IC701

TOP PREVIOUS NEXT

Pin No.	Terminals	I/O	Notes
1	TBIEOCB(I)	I	
2	RXRATE	I	
3	TXCLOCK	O	Output in logic test mode
4	DWELLSELECT4	I/O	
5	RXCLKOUT	O	Output in logic test mode
6	SWALLOW	O	Output in logic test mode
7	CHIPCLK	O	Output in logic test mode
8	CLK	I	
9	GND	-	
10	VDD	-	
11	LOCK	O	
12	TEST	I	
13	DWELLSELECT0	I/O	
14	DWELLSELECT1	I/O	
15	DWELLSELECT2	I/O	
16	DWELLSELECT3	I/O	Output in logic test mode
17	NC	-	
18	NC	-	
19	NC	-	
20	AGND	-	
21	ADD	-	
22	RSSI IN	I	A/D converter AIN
23	NC	-	
24	NC	-	
25	AVREF	I	
26	DGND	-	
27	DVDD	-	
28	NC	-	
29	NC	-	
30	NC	-	
31	NC	-	
32	NC	-	

Pin No.	Terminals	I/O	Notes
33	BUNRI	I	
34	DECRSSI0	I	
35	DECRSSI1	I/O	Output in logic test mode
36	DECRSSI2	I	
37	DECRSSI3	I	
38	DECRSSI4	I	
39	PCOUT	O	
40	PC1	I	
41	GND	-	
42	PC2	I	
43	TXPN	O	
44	RXENABLE	I	
45	RXPN	O	
46	MUTE	O	
47	RETARD	O	
48	ADVANCE	O	
49	SEL0	I	PN setting: PN1
50	SEL1	I	PN setting: PN2
51	REACQUIRE	I	
52	NRXRESET	I	
53	TXRATE	I	
54	NRESET	I	
55	TXENABLE	I	
56	MODE	I	
57	MINRSSI1	I	
58	MINRSSI2	I	
59	MINRSSI3	I	
60	MINRSSI4	I	
61	MINRSSI5	I	
62	MINRSSI6	I	
63	PEAK	O	
64	GND	-	

TOP PREVIOUS NEXT

9 CPU DATA (Handset)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

9.1 IC200 MN151233KA1

TOP PREVIOUS NEXT

Pin No.	Description	I/O	High	High-Z	Low
1	RESTART	O	-	NORMAL	Active
2	Vss				
3	OSC2	O		-	
4	OSC1	I		-	
5	Vdd				
6	XI	I		-	
7	XO	O		-	
8	RESET	I		-	RESET
9	NC				
10	Not Used	I		-	
11	PLL UNLOCK	I	UNLOCK	-	LOCK
12	SSLOCK	I	LOCK	-	UNCLOCK
13	ID IN(CHG)	I			
14	PN1	O	(14, 15) (H, L) (L, H) (H, H) (L, L)		
15	PN2	O		1G 2G 3G 4G	
16	SPMUTE	O	MUTE ON	-	MUTE OFF
17	PLL CLOCK	O		-	
18	NC				
19	TXPOW CTL	O	-	LOW	HIGH
20	Not Used	O			
21	SSRX RESET	O	NORMAL	-	RESET
22, 23	Not Used	O	-	-	FIXED
24	TXDATA	O		-	
25–27	Not Used	O	-	-	FIXED
28	TXPOW SLOW	O	NORMAL	-	SLOW
29–32	KEY IN	I	NORMAL	-	IN

Pin No.	Description	I/O	High	High-Z	Low
33~36	STROBE	O	-	NORMAL	ON
37~39	STROBE	O	-	NORMAL	ON
40	Not Used	O	-	-	LOW
41	CHARGE	I	NONE	-	CHARGE
42	BATT LOW	I	NORMAL	-	LOW
43	PLL DATA	O		-	
44	PLL ST	O		-	ACTIVE
45	ALARM	O		-	
46	ALARM VOL	O	LOW	-	HIGH
47	RSSI (H→L)	I	Electric field	-	
48	RSSI (L→H)	I	Electric field	-	
49	SQUELCH (SCAN)	I		-	Electric field
50	RSSI (CONV)	I	Electric field	-	
51	LIGHTED LED	O	ON	-	OFF
52	MICMUTE	O	MUTE ON	-	MUTE OFF
53	SPVOL2	O	(53, 54) (L, L) (L, H) (H, L)		
54	SPVOL1	O	LOW MID HIGH		
55	RX DATA	I		-	
56	POWER DOWN	I	NORMAL	-	DOWN
57	Not Used	O		-	
58	RX POWER	O	-	OFF	ON
59	TX POWER	O	-	OFF	ON
60	RXATT	O	-	ON	OFF
61	TALK LED	O	-	OFF	ON
62	BATT LED	O	-	OFF	ON
63	INTCOM LED	O	-	OFF	ON
64	Not Used	O	-	FIXED	

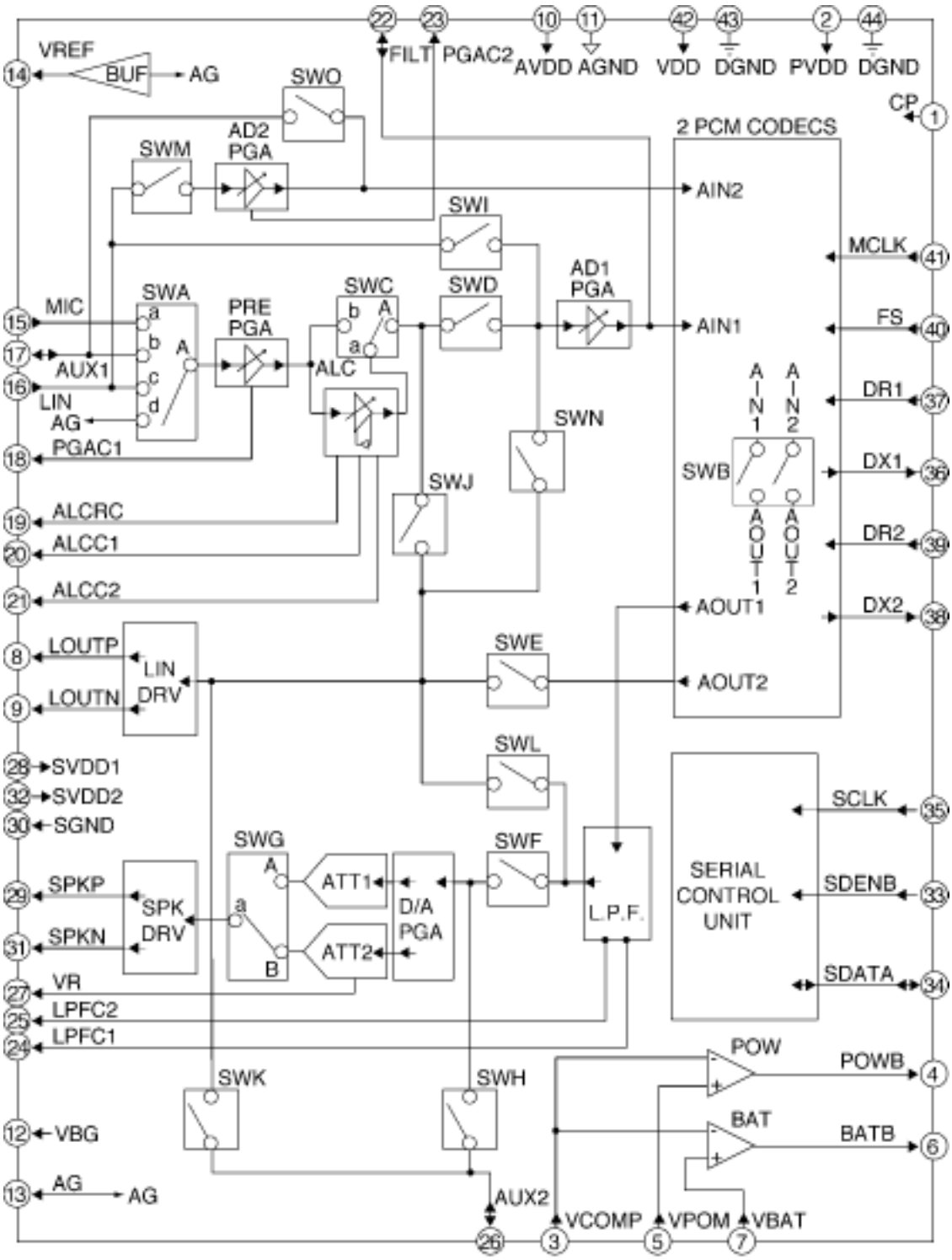
TOP PREVIOUS NEXT

10 EXPLANATION OF IC TERMINALS (Base Unit)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

10.1 IC401 PQVIMX93002F



Pin Discription

Pin NO.	Name	Description
1	CP	the Output of Internal PLL Charge Pump Circuits
2	PVDD	Digital Power ; 5V Power Supply for Internal PLL Charge Pump Circuits
3	VCOMP	the Reference Voltage for POW and BAT 2 Comparators use
4	POWB	Power-down Detector Output (Active Low)
5	VPOW	Power-down Detector Input ; the Voltage is Divided from System DC Power for Compare with VCOMP ; with 7 V Surge Protect
6	BATB	Battery Detector Output (Active Low)
7	VBAT	Battery Detector Input ; the Voltage is Divided from Battery Power for Compare with VCOMP ; with 7 V Surge Protect
8	LOUTP	Telephone Line Driver Non-inverter Output with PGA ; PGA from 0 to 22.5 dB / step ; 1.5 dB / step ;
9	LOUTN	Telephone Line Inverter Output with PGA ; see the pin description about LOUTP
10	AVDD	Analog Power Supply ; 5 V Power for all Internal Analog Circuits
11	AGND	Analog Ground ; Ground Reference (OV) for all Internal Analog Circuits
12	VBG	Band Gap Reference ; Nominal 1.25 V and should not be used to Sink or Source Current
13	AG	Internal Analog Ground ; Nominal 2.25 V and should not be used to Sink or Source Current
14	VREF	Voltage Reference ; Nominal 2.25 V and can sink 450uA
15	MIC	Microphone Input with PRE-PGA ; PRE-PGA Gain is from -15 to 21 dB ;
16	LIN	Telephone Line Signal Input with PRE-PGA and AD2-PGA Gain is from -15 to 21 dB and AD2-PGA Gain is from -6 to 39 dB ;
17	AUX1	1. Auxiliary Signal Input with PRE-PGA ; 2. as an Output port for AIN2 (AD2 Input)
18	PGAC1	Programmable Gain Amplifier Offset Capacitor
19	ALCRC	Auto Level Control Time Constant ; see BASIC COMPONENTS REQUIRED
20	ALCC1	Auto Level Control DC Blocking Capacitor Output
21	ALCC2	Auto Level Control DC Blocking Capacitor Input
22	FILT	1. Anti-aliasing Filter ; 2. as an I/O Port for AIN1 (AD1 Input)
23	PGAC2	Programmable GAin Amplifier Offset Capacitor
24	LPFC1	1. the Option of the External Passive L.P.F. for LIN_DRV and SPK_DRV, if LPFC1 and LPFC2 pins are NC then the signal will by-pass L.P.F. ; 2. as the Output Port of AOUT1 ; where 3dB point : fc = 1 / 2 Ω 3K Ω (±10%) C14 or C13
25	LPFC2	the Option of the External Passive L.P.F. ; see the pin description about LPFC1
26	AUX2	as an Input / Output Port for SWK and SWH
27	VR	Speaker Volume Control ; use a 10k Variable / Fixed Resister for External / Digital Volume
28	SVDD1	Analog Power Supply ; 5V Power for Speaker Driver
29	SPKP	Speaker Driver Non-inverter Output with PGA ; PGA Gain from 0~18 dB ; it's can be Attenuated by ATT2 (VR1) or ATT (REG3 bit (3~0) ; see NOTE5 and NOTE6
30	SGND	Analog Ground ; Ground Reference (OV) for Speaker Driver
31	SPKN	Speaker Driver Inverter Output ; see the pin description about SPKP
32	SVDD2	Analog Power Supply ; 5 V Power for Speaker Driver
33	SDENB	Serial Data Enable ; Active Low ; for start to Receive / Transmit Serial Control Data (A2~D0)
34	SDATA	Bi-directional Serial Port ; It's an Interface for Microprocessor to send / receive Serial Control Data
35	SCLK	Serial Control Data Clock ; the clock source of Serial Control Data ; from Microprocessor
36	DX1	Transmit Data 1 Pin (CODEC1 Serial Data)
37	DR1	Receive Data 1 Pin (CODEC1 Serial Data)
38	DX2	Transmit Data 2 Pin (CODEC2 Serial Data)
39	DR2	Receive Data 2 Pin (CODEC2 Serial Data)
40	FS	CODEC Frame Sync. ; 8KHz Frame Sync. Clock for the Transmit / Receive Data
41	MCLK	Master Closk Input, if MCLK is continuously high or low then MX93002 will into POwer-Down Mode
42	VDD	Digital Power ; 5 V Power Supply for all Internal Digital Logic
43	DGND	Digital Ground ; Ground Reference (0 V) for all Internal Digital Logic
44	POW	Digital Ground ; Ground Reference (0 V) for Internal PLL Charge Pump Circuits

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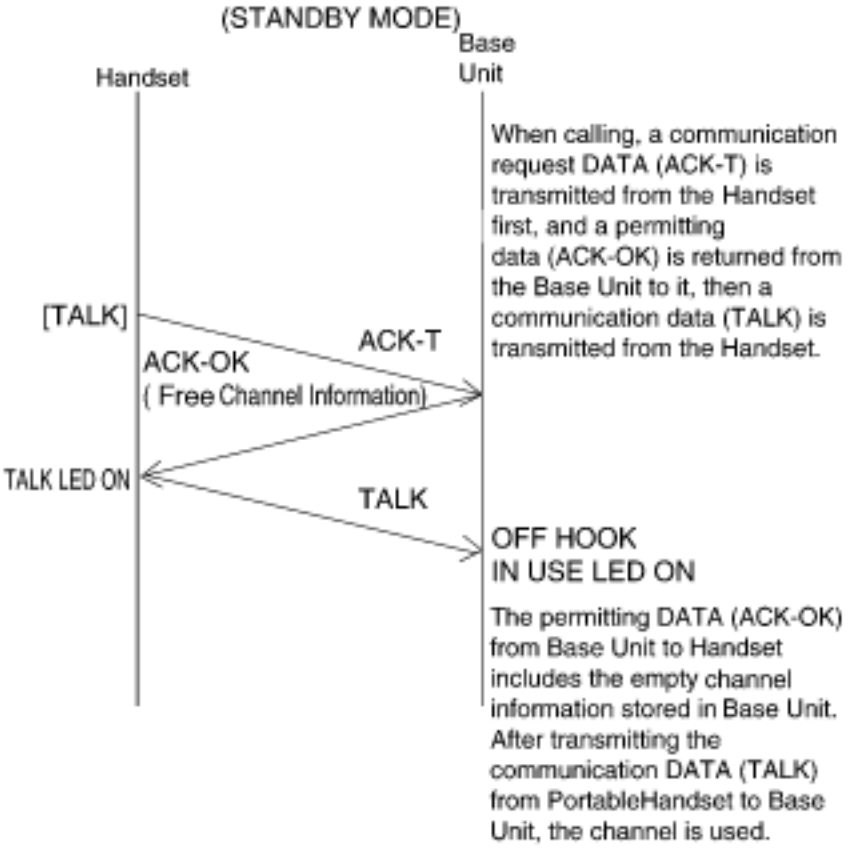
11 EXPLANATION OF CPU DATA COMMUNICATION

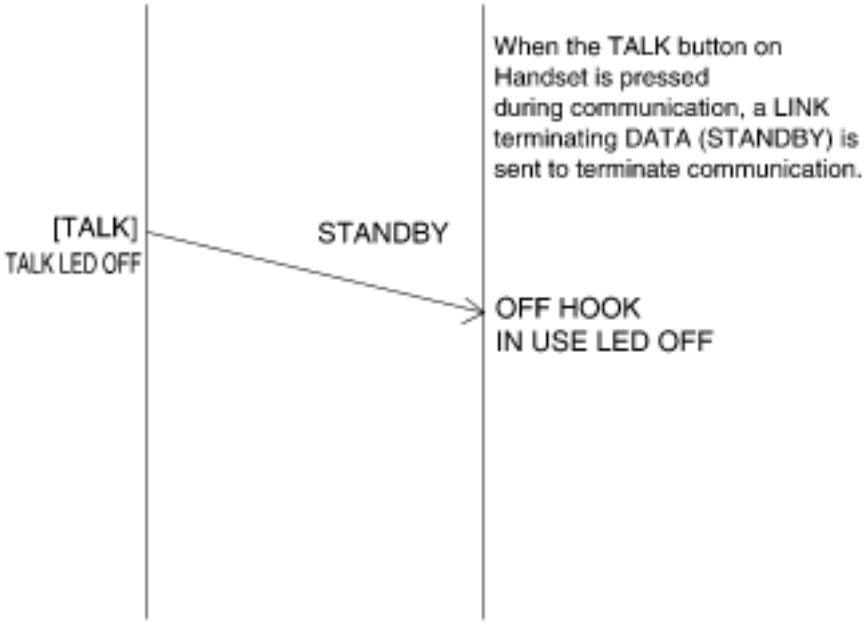
TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

11.1 Calling


(STANDBY MODE)
Handset
Base Unit
When calling, a communication request DATA (ACK-T) is transmitted from the Handset first, and a permitting data (ACK-OK) is returned from the Base Unit to it, then a communication data (TALK) is transmitted from the Handset.
[TALK]
ACK-T
ACK-OK
(Free Channel Information)
TALK LED ON
TALK
OFF HOOK
IN USE LED ON
The permitting DATA (ACK-OK) from Base Unit to Handset includes the empty channel information stored in Base Unit. After transmitting the communication DATA (TALK) from PortableHandset to Base Unit, the channel is used.

11.2 To Terminate Communication



11.3 Ringing

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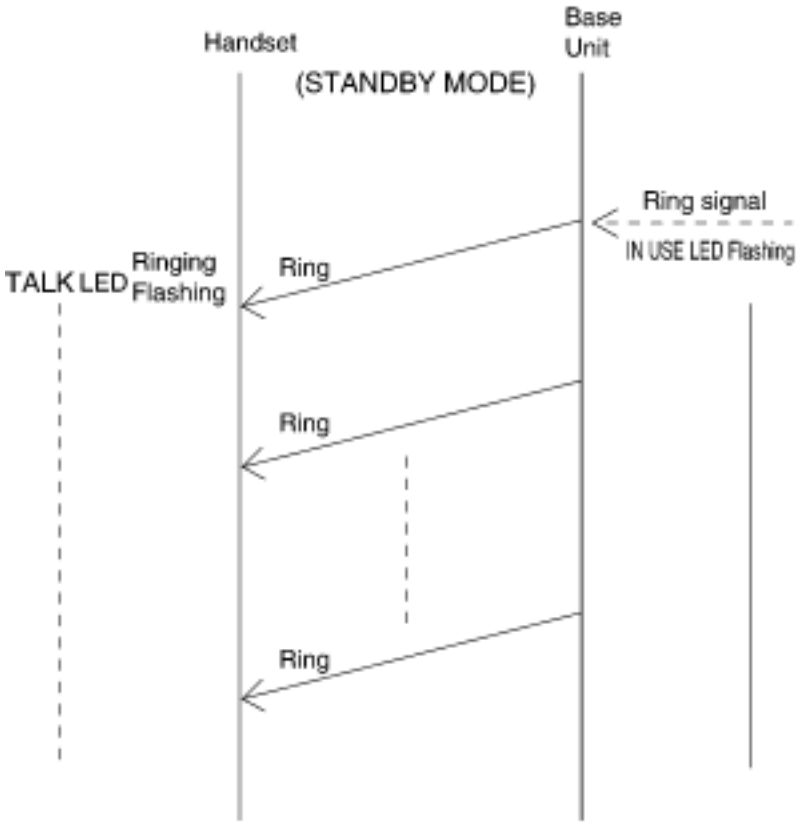


After detecting the Ring signal from circuit, Base Unit sends a ring signal DATA (Ring), then the Handset starts ringing.

TOP PREVIOUS NEXT

11.4 Ports for Transmitting and Receiving of Data

Handset:

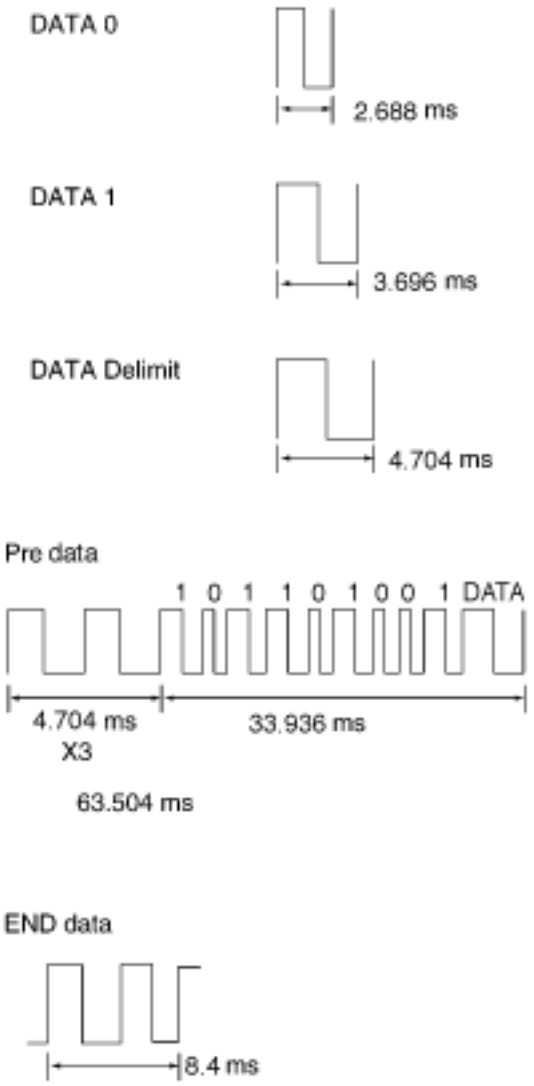
transmitting ... 24 Pin receiving ... 55 Pin

Base Unit:

transmitting ... 17 Pin receiving ... 22 Pin

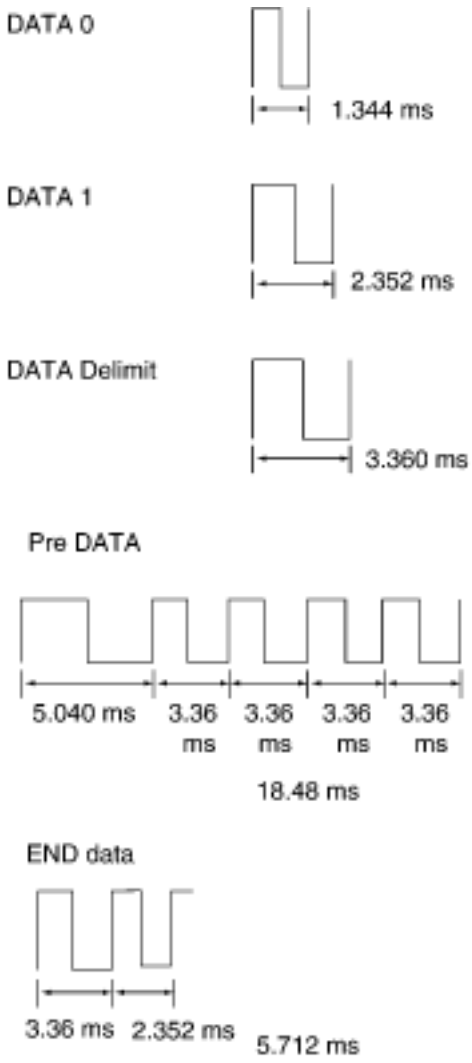
11.5.1 Handset

Transmitting DATA Format



11.5.2 Base Unit

Transmitting DATA Format



11.6 When Linking

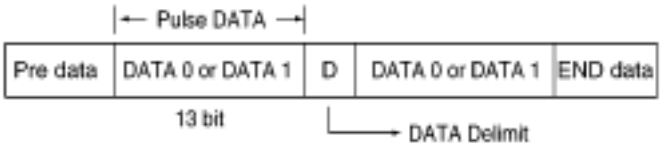
TOP PREVIOUS NEXT

When Linking from the Handset (when becoming STBY to TALK), DATA is transmitted in above format. The combined portion of DATA 0 and DATA 1 is transmitted in LINK requesting DATA (35bit) format first. Then, when LINK OK (ACK-OK) DATA (19bit) is returnedfrom the Base Unit, it is sent as LINK from DATA after changing the combination of DATA 0 and DATA 1. And the DATA Delimit is between each Frame as a stop./The contents of LINK requesting DATA and LINK form DATA are different depending on each operation.

TOP PREVIOUS NEXT

11.7 Pulse Dial

TOP PREVIOUS NEXT

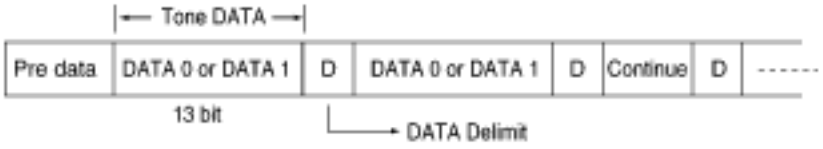


When executing Pulse Dial,the Pulse Dial DATA is transmitted from the Handset to the Base Unit in above format.The combination of DATA 0 and DATA 1 are changed by each Dial No. And the DATA Delimit is between each Frame as a stop.The number of Frameis 2.

TOP PREVIOUS NEXT

11.8 Tone Dial

TOP PREVIOUS NEXT



When executing Tone Dial, Tone Dial DATA is transmitted from the Handset to the Base Unit in above format.The DATA is changed by Dial No. as same as Pulse Dial. When Tone Dialing, DATA (Continue DATA) that the key is pressed continuously is sentto the Base Unit during the key is pressed.

Note:

1,000,000 kinds of the security code are available for the mode KX-TGM240-B. Each time the Handset is set on the cradle of the base unit (for charging), the CPU automatically change the security code.

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12 OPTION DIODE

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

12.1 Handset

	CONTENTS
A	TEST MODE1
B	HARD MUTE
C	BATTLOW Display Time
D	Weak Electric Field Alarm

	OPEN
A	NORMAL
B	NONE (DATA MUTE)
C	30 min.
D	NONE

	SHORT
A	TEST
B	PROVIDED
C	1 hour
D	PROVIDED

12.2 Contents (Flash time setting)

OPERATION	ACTION	DISPLAY
(1) Press "PROGRAM" button of the handset.	•A beep sounds, then the unit goes into the PROGRAM mode.	•"TALK LED" of the handset flashes.
(2) Press a button of "1" ~"4" of the handset. ("1" ~"4" correspond to the following time.) "1": 100ms (Continuous pressing is not acceptable.) "2": 250ms (Continuous pressing is not acceptable.) "3": 400ms (Continuous pressing is not acceptable.) "4": 700ms (Continuous pressing is acceptable.)	•A beep sounds, then the FLASH time is selected.	
(3) Press "AUTO" button.	•A beep sounds, then the desired FLASH time is settled.	
(4) Press "FLASH" button.	•When exchanging the data with the base unit is accomplished, the selected FLASH time is settled. •The registered sound (same with the last time: twice, different from the last •The unit goes into STANDBY mode.	•"TALK LED" of the handset turns OFF.

13 TEST MODE SETTING

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

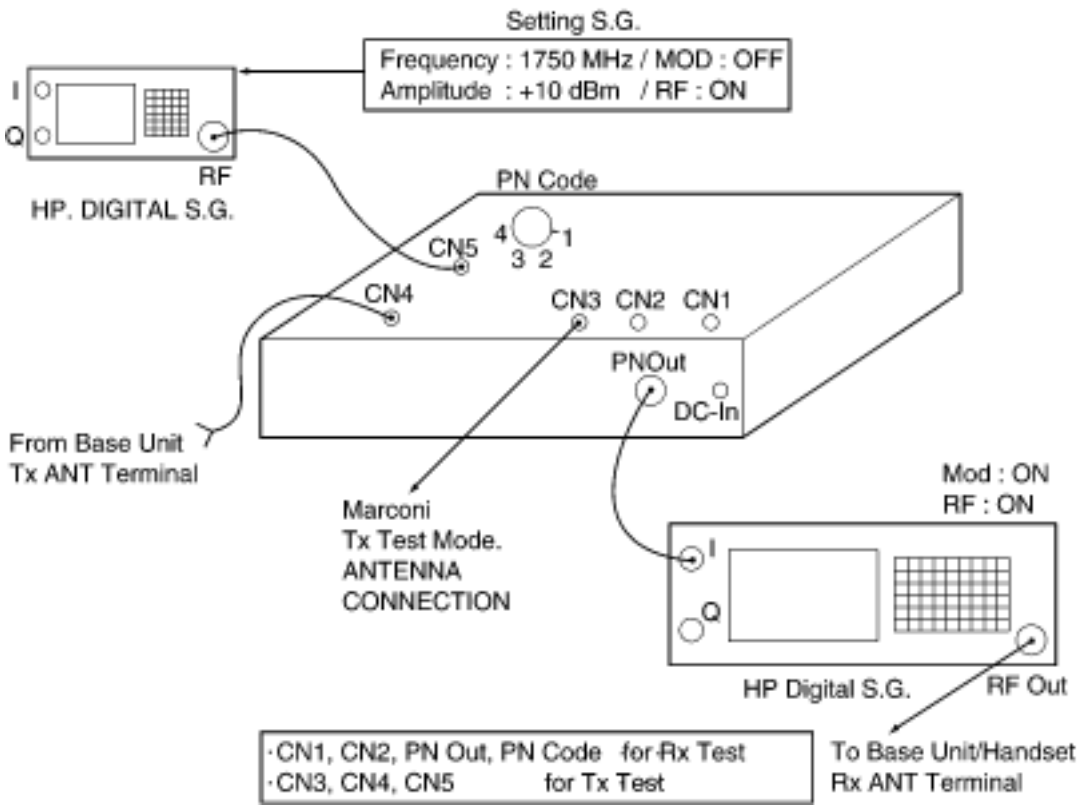
13.1 KX-TGM240-B Test Equipment

TOP PREVIOUS NEXT

1. Set PN code (refer to Frequency Table)/When you think that you want to set Test Mode on CH8, you have to set PN code 4.

2. Power on/If you change channel after power on, you have to turn off→ On Power SW.

3. Connect to other Equipments. SAME CONNECTION FOR BASE UNIT+ HANDSET.



CN3, CN4 and CN5 compose down convertor./(CN3 Output Signal Frequency)= (CN4 Input Signal Frequency)- (CN5 Input Signal Frequency)

< for example >
When you input 1750MHz Signal to CN5, and connect Base Unit setting CH1 to CN4, you can get 652.08MHz Signal from CN3.

CN4	CN5	CN3
2402.08 MHz (CH1)	1750.0 MHz	= 652.08 MHz

TOP PREVIOUS NEXT

13.2 Frequency Table (MHz)

TOP PREVIOUS NEXT

PN Code	CH	Base Unit Tx Frequency Handset Rx Frequency	PN1	PN2	Base Unit Rx Frequency Handset Tx Frequency	Test Equipment PN Code No
1	1	2402.080	L	H	909.640	1
2	2	2404.640	H	L	910.000	2
3	3	2407.200	H	H	910.360	3
4	4	2409.760	L	L	910.720	4
1	5	2412.320	L	H	911.080	1
2	6	2414.880	H	L	911.440	2
3	7	2417.440	H	H	911.800	3
4	8	2420.000	L	L	912.160	4
1	9	2422.560	L	H	912.520	1
2	10	2425.120	H	L	912.880	2
3	11	2427.680	H	H	913.240	3
4	12	2430.240	L	L	913.600	4
1	13	2432.800	L	H	913.960	1
2	14	2435.360	H	L	914.320	2
3	15	2437.920	H	H	914.680	3
4	16	2440.480	L	L	915.040	4
1	17	2443.040	L	H	915.400	1
2	18	2445.600	H	L	915.760	2
3	19	2448.160	H	H	916.120	3
4	20	2450.720	L	L	916.480	4
1	21	2453.280	L	H	916.840	1
2	22	2455.840	H	L	917.200	2
3	23	2458.400	H	H	917.560	3
4	24	2460.960	L	L	917.920	4
1	25	2463.520	L	H	918.280	1
2	26	2466.080	H	L	918.640	2
3	27	2468.640	H	H	919.000	3
4	28	2471.200	L	L	919.360	4
1	29	2473.760	L	H	919.720	1
2	30	2476.320	H	L	920.080	2
3	31	2478.880	H	H	920.440	3
4	32	2481.440	L	L	920.800	4

TOP PREVIOUS NEXT

13.3 KX-TGM240-B Mode Setting

(Handset)

(Measurement Items)	Tx Power Mode (Press "8" key)	SS Mode (Press "0" key)
Tx		
1.Standard Frequency (Carrier Frequency)	High	off
2.Transmit Power	High	on
3.Modulation Level	High	off
Rx		
1.All Items	High	on

(Base Unit)

(Measurement Items)	Tx Power Mode (Press "SKIP" key)	SS Mode (Press "STOP" key)
Tx		
1.Standard Frequency (Carrier Frequency)		
2.Transmit Power		
3.Modulation Level		
Rx		
1.All Items		

13.4 KX-TGM240-B Test Mode

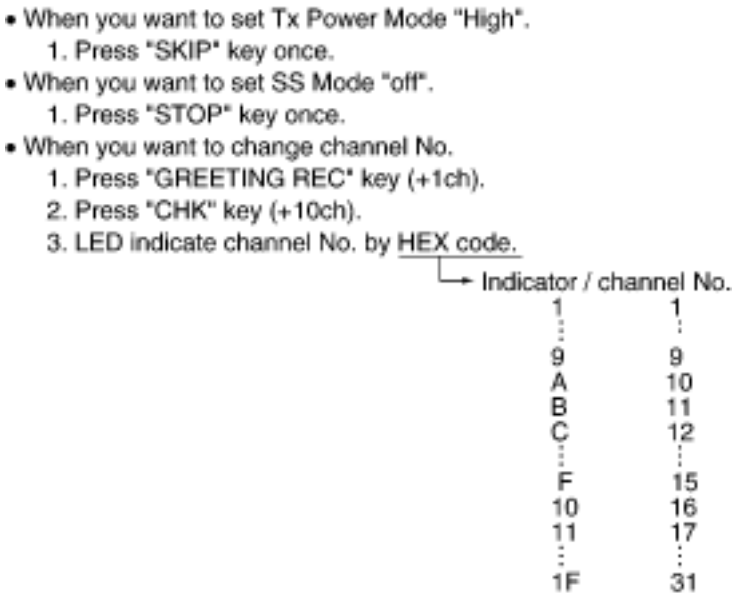
TOP PREVIOUS NEXT

(Handset)

1. Supply DC 3.9V.
2. Press "TALK" key.
3. While flash LED, press "5" , "8" , "0" , at the same tone.
4. Press "DIRECT" key.
5. Press channel No.2 digit. (CH2→ "0" and "2" .)
6. Press "TALK" key.

(Base Unit)

1. Pressing "CHK", "ANSWER ON", "VOLUME DOWN" key. Connect the AC Adaptor.
2. Press "LOCATOR/INTERCOM" key once./- Finish Setting - (Test Mode CH1)/Now, Tx Power Mode is "off (Low)"./SS Mode is "on"./Channel is CH1.



TOP PREVIOUS NEXT

14 ADJUSTMENT

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

14.1 Objective

This procedure will enable the technician to make adjustments to the KX-TGM240-B HANDSET and BASE UNIT.

14.2 General Information

This procedure has 2 sections. The first section instructs the technician on how to align the HANDSET. We recommend aligning the HANDSET first, since you will need the HANDSET to align the BASE UNIT. The second section aligns the BASE UNIT. Youcan use either section separately, or together to align the entire cordless phone unit.

At the beginning of each section, you will find a preparation procedure instructing you on how to prepare the unit to the point of placing the unit in TEST mode. Please follow this procedure to insure proper alignment.

Each section's procedure consists of Adjustment Items adjusting one specific variable hardware component. Each Item lists the equipment needed, how to connect and setup the equipment, how to make the adjustment, and how to verify the adjustmentif necessary.

Before the actual procedure, you will find a procedure detailing how to place that part in TEST mode. You will have to perform this procedure before each individual Adjustment Item.

Once aligned, please remove all equipment connections and solder points, and reassemble the unit. As a final check, power up the phone and check for HANDSET linking with the BASE UNIT.

14.3 Equipment

1. Digital Signal Generator Hewlett Packard ESG-D3000A (E4432B).
2. Marconi: Model 2945A
3. Spectrum Analyzer: ADVANTEST R3131
4. 4.5 digit Digital Multimeter : B&K Model 2833 or compatible.
5. Oscilloscope, single or dual channel : Panasonic VP-5512P100 or compatible.
6. Telephone Analyzer : B&K Model 1050 or compatible.
7. DC Power Supply, capable of supply 3.9V DC at 500mA NOTE : only needed if Telephone Analyzer does not have DC VOLTS output available.
8. High Frequency Attenuator, 10dB or greater.
9. Corded Telephone.
10. High Frequency Cable : RG-188A/U.
11. Audio Cable : BNC end to alligator clip end.
12. HOZAN D-280 ceramic screw driver.
13. Isolation Capacitors, quantity of 2, part No. ECEA1HU100.
14. Soldering Iron, solder, and various tools.

15 HOW TO CHECK THE RF UNIT (Base Unit)

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TOP PREVIOUS NEXT

15.1 Base Unit

1. Warm up the Marconi Radio Tester, E4432 and R3131 for at least 30 minutes to allow internal crystal oscillation to become stable.

2. Please refer to figures below for base unit wire connection.

3. Connect the AC Adaptor (KX-A11-6), press "SKIP/FF" to power ON.

4. Press keys 1, 9 and* on the base unit simultaneously, and press LOCATOR/INTERCOM key twice to set base to test mode.

15.2 Carrier Frequency Check

1. Solder RF cable to ANT and RF GND.
2. Press "0" key and set SS Mode to be OFF.
3. Set Spectrum Analyzer:

   SPAN=100KHz, RBW=1KHz, VBW=1KHz
4. Input Reception Signal from SG:

   Freq.=909.640 MHz, Amp.=0 dBm, Mod.=OFF
5. Check TX Frequency as shown on CRT. This should be 2402.080 MHz± 3kHz
6. Adjust value of VC601 so that it is 2402.080 MHz± 3kHz .

   When VC601 cannot be adjusted at this value, replace RF unit.

15.3 Transmit Power Check

TOP PREVIOUS NEXT

Check TX POWER reading equals to +19dBm ± 4dB (reading should+15 dBm ~+23 dBm). When this value is NG, replace RF unit.

Set Spectrum Analyzer:

SPAN=10MHz, RBW=3MHz, VBW=100Hz

TOP PREVIOUS NEXT

15.4 Receiving Sensitivity Check

1. Connect audio cable positive lead to TP-AF, negative lead to TP-GND and BNC end to AF INPUT.

2. Set HP ESG-D3000A (E4432B) as below:

    1. Frequency= 909.640 MHz

    2. Amplitude= -30 dBm

    3. FM Mode

        FM=ON, FM Dev.=12 kHz, FM Rate=1 kHz

    4. I/Q Mode

        I/Q=ON, I/Q Source=Ext. I/O

    Set Marconi to Receiver Test Mode by pressing RX TEST.

    Press SINAD button until the dispaly shows the SINAD value and press dB button.

    Press "Amplitude" of HP. ESG-D3000A (E4432B). Lower the value of Amplitude so that SINAD is 12 dB.

    When pin 21 of CN600 (AF Out) is touched, confirm that Amplitude value of HP ESG-D3000A (E4432B) is more than -105 dBm. When this value is NG, replace RF unit.

15.5 Squelch Check

1. Keep same RX TEST settings as in Receiving Sensitivity Check .

2. Connect scope (X1) positive lead to TP-SQL, negative lead to TP-GND and BNC end to scope. Set scope to following condition.

    1. TIME/DIV= 1 msec.

    2. VOLT/DIV= 1 V

    Set RF GEN LEVEL to -95dBm (+8 dBμ Vemf). Check scope voltage is LOW .

    Set RF GEN LEVEL to -120dBm (-7 dBμ Vemf). Check the scope voltage is HIGH .

    When the scope does not show above condition, press "Amplitude" of HP. ESG-D3000A (E4432B) and lower the value of Amplitude so that SINAD is 12 dB.

    When pin 4 of CN600 (SQL Out) is touched, adjust VR601 until scope voltage toggles between LOW & HIGH . When VR601 cannot be adjusted at this value, replace RF unit.

15.6 RSSI (Receiving Signal Strength Indicator) DC Voltage Check

1. Set HP ESG-D3000A (E4432B) as below:

    1. Frequency=909.640 MHz

    2. Amplitude=-30 dBm

    3. FM Mode

        FM=ON, FM Dev.=12 kHz, FM Rate=1 kHz

    4. I/Q Mode

        I/Q=ON, I/Q Source=Ext. I/O

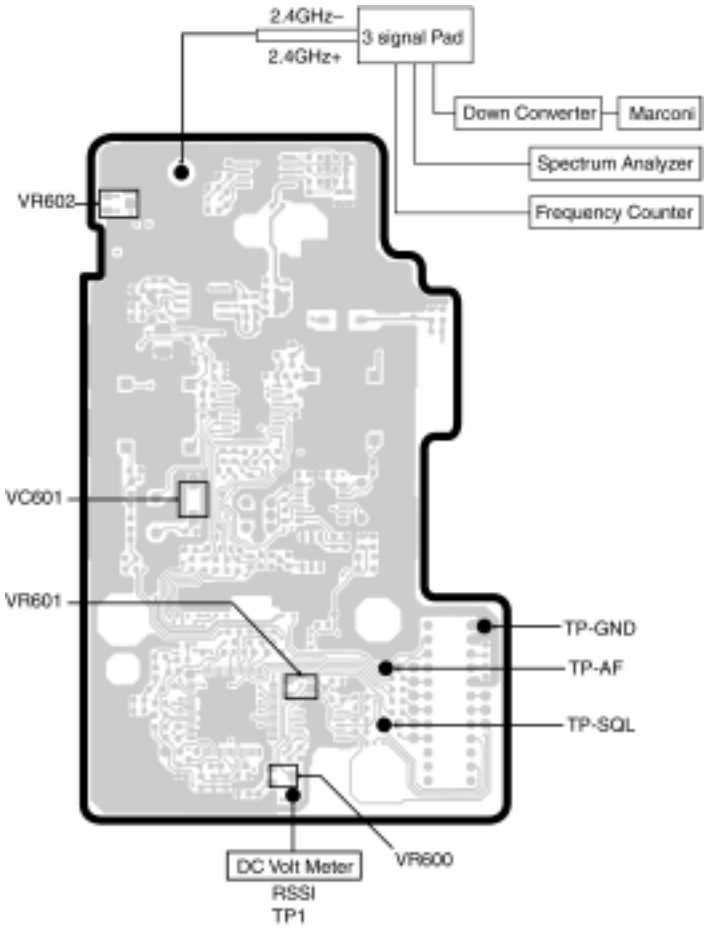
    Connect positive lead and TP1 (DC Voltmeter) and connect negative lead and TP-GND.

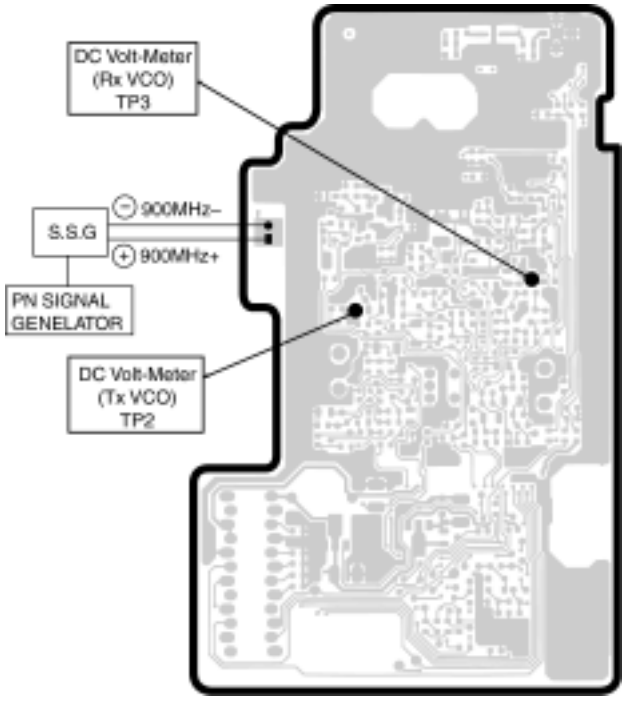
    Comfirm that RSSI value is+1.5 V±0.2 V.

    When RSSI value is not+1.5 V±0.2 V, adjust the value at VR600. When RSSI cannot be adjusted at this value, replace RF unit.

15.7 VCO Voltage Check (TX VCO Check)

1. Connect TP2 to positive lead of DC Voltmeter and connect TP-GND to negative lead.
2. Confirm that TX VCO Voltage is 0.5~2.5 V. When this value is NG, replace RF unit.
3. Confirm that RX VCO (TP3) Voltage is 0.5~2.5 V. When this value is NG, replace RF unit.





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16 ADJUSTMENT (Base Unit)

TOP PREVIOUS NEXT

16.1 Base Unit Preparation

16.2 Symptom/Remedy Table

16.3 Base Unit Adjustment Preparation

16.4 Base Unit Reference Drawing

TOP PREVIOUS NEXT

16.1 Base Unit Preparation

TOP PREVIOUS NEXT

Please prepare the BASE UNIT before performing any adjustment procedures. Refer to the BASE UNIT REFERENCE DRAWING for connection and test point locations.

1. Unscrew all 5 screws from bottom of cabinet. Remove cabinet bottom.

2. Unsolder antenna wire at RF module.

3. Solder a test mode switch as shown on the BASE UNIT REFERENCE DRAWING.

4. Solder one isolation capacitor's positive lead to the main P.C.Board TPT point and the other isolation capacitor••s positive lead to the main P.C.Board TRR point.

5. Connect the Audio Cable, positive lead to the TIP isolation capacitor's free lead, the negative lead to the RING isolation capacitor's free lead. Do not connect the BNC end of the cable.

6. Connect the Telephone Analyzer PHONE TEST JACK #1 to the BASE UNIT P.C.Board phone jack.

7. Connect the corded telephone to the Telephone Analyzer PHONE TEST JACK #2 .

8. Remove main P.C.Board from cabinet top and place beside cabinet.

9. Solder High Frequency Cable open end to ANT and RF GND as specified in BASE UNIT REFERENCE DRAWING.

TOP PREVIOUS NEXT

16.2 Symptom/Remedy Table

TOP PREVIOUS NEXT

If you have one of the listed symptoms, please refer to this table and make the appropriate adjustments.

SYMPTOM	REMEDY
Transmission sound to HANDSET receiver is unstable	Adjust Items (A) and (C).
Does not link with HANDSET	Adjust Items (C) and (D).

TOP PREVIOUS NEXT

16.3 Base Unit Adjustment Preparation

Please perform the following steps to prepare the BASE UNIT for the Adjustment procedure.

1. Connect P.C.Board to all equipment as specified in TPCDLTST section, TPGND portion.

2. Connect AC Adaptor to AC Jack of BASE UNIT main P.C.Board.

3. Press LOCATOR/INTERCOM button twice. BASE UNIT P.C.Board should be in TEST MODE (CH1 TALK). Connect Spectrum Analyzer, and confirm frequency for CH1. If unit is not in TEST MODE, remove power from P.C.Board and repeat last step.

4. The output power switches ON/OFF at every time you press "SKIP/FF". (Factory default setting is OFF).

5. SS mode switches ON/OFF at every time you press "STOP". (Factory default setting is ON).

   Once aligned, please reassemble the base unit. Also take off the back of the HANDSET and unsolder the MIC lead short wire if you previously installed it.

ADJUSTMENT ITEM DESCRIPTION	(A) Standard Frequency (Tx Test)
EQUIPMENT	**ADVANTEST R3131** Set Spectrum Analyzer: **SPAN=10MHz** **RBW=3MHz** **VBW=100Hz** **Output power of base unit: "ON"** **(Follow the procedure (4).)** **SS mode of base unit: "OFF"** **(Follow the procedure (5).)** High Frequency Cable to right RF connector. **Telephone Analyzer** **Corded Phone** Take phone off hook
PROCEDURE	**ADVANTEST R3131** Check MARKER equals **2402.08 MHz ± 0.003 MHz**. When value is overed **2402.08 MHz ± 0.003 MHz**, Adjust VC601 Note This item's setup is exactly the same as Item (C). If you have done Item (C), simply look at TX FREQ on the R3131 and make the adjustment.

ADJUSTMENT ITEM DESCRIPTION	(B) Voice signal Output (Rx Test)
EQUIPMENT	**ESG-D3000A (E4432B)** **FREQ 909.640 MHz** **Amplitude –30dBm** **(FM)** **FM Rate 1.000 kHz I/Q ON** **FM Dev. 12.0 kHz I/Q Source Ext I/Q** PN input from external I terminal **SS Mode of base unit: ON** (Follow the procedure (5).) High Frequency Cable to left RF connector. Audio Cable positive lead to **TPT** isolation capacitor, negative lead to **TPR** isolation capacitor. (If not using B&K1050) **Telephone Analyzer** **Corded Telephone** Take phone off hook
PROCEDURE	Adjust **VR501** until **AF VOLTS** equals **–16 dBm ± 2 dBm**

ADJUSTMENT ITEM DESCRIPTION	(C) RX Input (Line Modulation) (Tx Test)
EQUIPMENT	**Marconi** SETUP Place in Transmitter Test mode. **AFGEN** **FREQ 1.000kHz** **LEVEL –20 dBm (27mV)** **(Input between TPT-TPR)** High Frequency Cable to right RF connector. **SS Mode of base unit: "OFF"** (Follow the procedure (5).) **Output power of base unit: "ON"** (Follow the procedure (4).) **Telephone Analyzer Corded Phone** Take phone off hook **KX-TG240-B** Placed inTEST mode by inserting battery while pressing 1, 9 and ✳ keys
PROCEDURE	Adjust **VR502** until **MOD LEVEL** equals **24 kHz ± 0.5 kHz** Notes You need to place the HANDSET in TEST mode to drow spurious RF signals that is being received at the BASE UNIT. By shorting the MIC leads insures that you are sending an unmodulated RF signal. You need the corded phone off hook to keep the telephone analyzer from sending a dial tone to the unit under test. The dial tone adds to the MOD LEVEL value greatly.

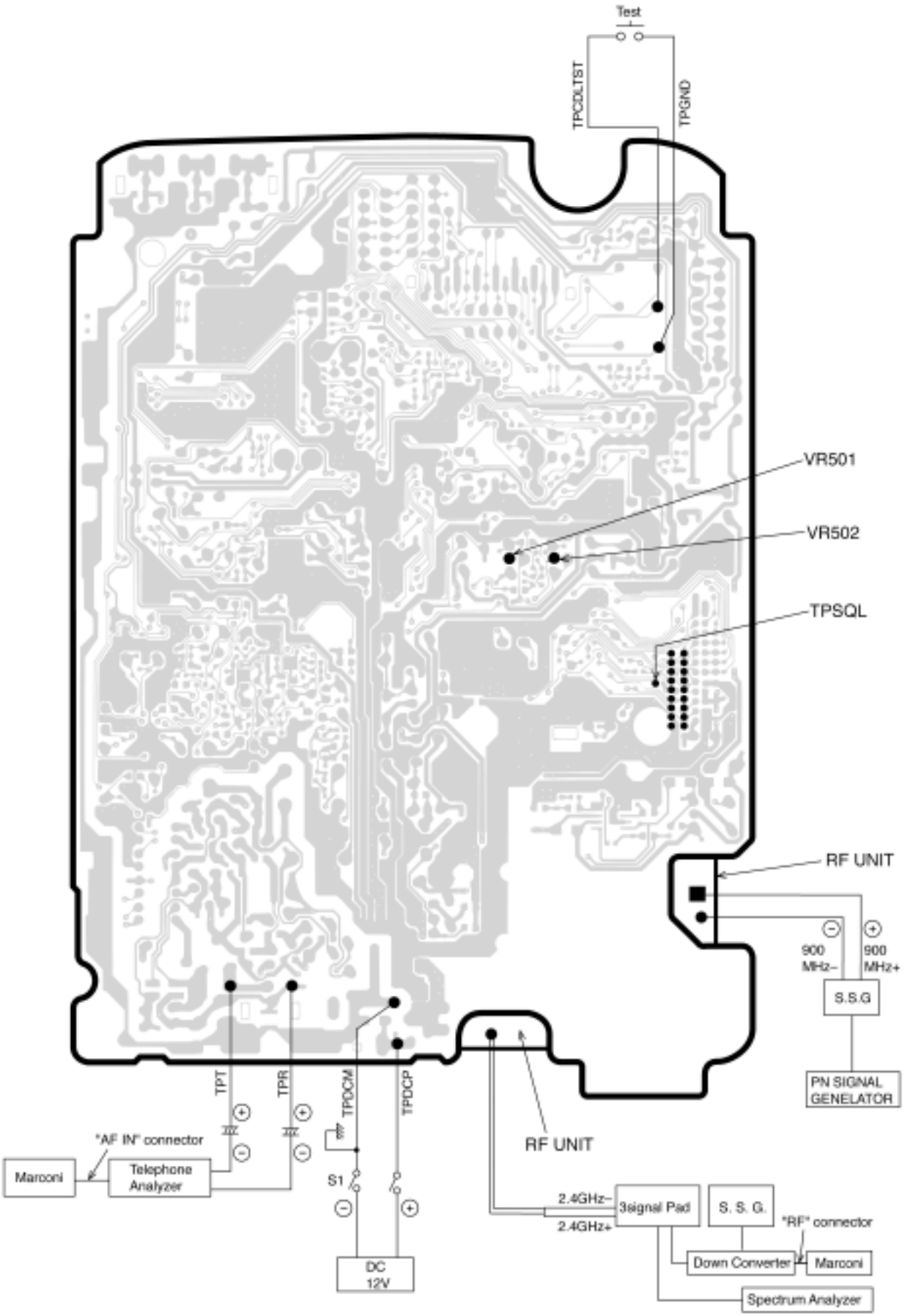
ADJUSTMENT ITEM DESCRIPTION	(D) Squelch (RX sensitivity confirmation and squelch adjustment) (Rx Test)
EQUIPMENT	**ESG-D3000A (E4432B)** **FREQ 909.640 MHz** **Amplitude –30dBm** **(FM) (I/Q)** **FM Rate 1.000 kHz I/Q ON** **FM Dev. 12kHz I/Q** **Source:Ext I/Q** PN input from external I terminal **SS Mode of base unit: ON** (Follow the procedure (5).) One end of BNC cable to left RF connector, other end to Attenuator Input. Audio Cable positive lead to **TPT** isolation capacitor, negative lead to **TPR** isolation capacitor, BNC end to AF INPUT connector. **Oscilloscope** SETUP X1 probe connected to INPUT 1. Probe ground connected to **GND**. TIME/DIV 1ms VOLT/DIV 1V Auto trigger **Telephone Analyzer** **Corded Phone** Take off hook
PROCEDURE	On Model 2945, press SINAD until the display shows the SINAD value and press **dB**. Then press Amplitude on ESG-D3000A (E4432B). Lower Amplitude at SINAD 12 dB and confirm that RF GEN LEVEL is less than **–105dBm**. Attach the oscilloscope probe to TP SQL. When Amplitude is set at –95dBm, confirm that the signal of 20 dB TEST POINT is Low. After that, set Amplitude –120dBm, and confirm that the signal of 20 dB TEST POINT is HIGH. When level is NG, adjust again following Squelch Check item 5. (Refer to page 18)

ADJUSTMENT ITEM DESCRIPTION	(E) RSSI Level Adjustment (Rx Test)
EQUIPMENT	**ESG-D3000A (E4432B)** **FREQ 909.640 MHz** **Amplitude -30dBm** **(FM) (I/Q)** **FM Rate 1.000 kHz I/Q ON** **FM Dev. 12 kHz I/Q Source:Ext I/Q** **PN input from external I terminal** **SS Mode of base unit: ON** (Follow the procedure (5).)
PROCEDURE	Adjust VR600 so that the Voltage of TP1 becomes 1.5V ± 0.2V. (Refer to page 18)

Once aligned, please reassemble the base unit. Also take off the back of the HANDSET and unsolder the MIC lead short wire if you previously installed it.

TOP PREVIOUS NEXT

16.4 Base Unit Reference Drawing



17 HOW TO CHECK THE RF UNIT (Handset)

1. Warm up the Marconi Radio Tester, ESG-D3000A (E4432B) and R3131 for at least 30 minutes to allow internal crystal oscillation to become stable.

2. Refer to figures below for Handset wire connections.

3. Disconnect the Handset antenna from the PCB. If you allow the antenna to remain and be a load, the readings will be wrong.

4. Supply DC 3.9V Handset PCB using a DC power supply.

5. Press TALK , then press " 5 ", " 8 " and " 0 " simultaneously.

6. Press INTERCOM , press TALK .

17.1 Carrier Frequency Check

1. Set R3131:
    1. Press "8" key twice to set "High" Power Mode.
    2. Press "0" key once to set "SS" Mode OFF.
    3. SPAU=10 MHz, RBW=3 MHz, VBW=100 Hz

    Check TX Frequency= 909.640 MHz ± 3kHz dev .

    When value if off, adjust VC301 .

17.2 Transmit Power Check

1. Set R3131:
    1. Press "8" key twice to set "High" Power Mode.
    2. Press "0" key once to set "SS" Mode ON.

Check R3131 TX Power reading. It should equal +19 dBm ± 4 dB (+15 dBm ~+23 dBm).

17.3 Receiving Sensitivity Check

1. Connect audio cable BNC side to AF INPUT in Marconi and other side to TP-SP+ and TP-GND.

2. Set ESG-D3000A (E4432B). Enter the following setting:

    1. Frequency= 2402.080 MHz

    2. Amplitude= -30 dBm

    3. FM= FM: ON, FM Dev.: 24 kHz, FM Rate: 1.0 kHz

    4. I/Q= I/Q: ON, I/Q: Source, Ext: I/Q

    Press the SINAD button on Marconi until the display shows SINAD value. Press the dB button.

    Press the Amplitude button of ESG-D3000A (E4432B).

    Using the VARIABLE knob on ESG-D3000A (E4432B) decrease RF GEN LEVEL value until SINAD value is 12 dB .

    Check the Amplitude . This should be less than -105dBm .

17.4 Squelch Check

1. Connect scope probe (X1) lead to TP-20 dB, negative to GND and BNC end to scope.
2. Set scope to the following codition: TIME/DIV= 1 msec, VOLT/DIV= 1 V
3. Set RF GEN LEVEL to -95 dBm . Check scope voltage is LOW .
4. Set RF GEN LEVEL to -120 dBm . Check scope voltage is HIGH .
5. When scope does not show above condition at item 5 to Receiving Sensitivity Check, adjust VR302 until scope voltage toggles between LOW & HIGH .

17.5 VCO Voltage Level Check (TX VCO Check)

1. Connect TP2 to positive lead of DC Voltage Meter and connect TP-GND to negative lead.
2. Comfirm that TX VCO Voltage is 0.5~2.5 V.
3. Comfirm that RX VCO (TP3) Voltage is 0.5~2.5 V.

18 ADJUSTMENT (Handset)

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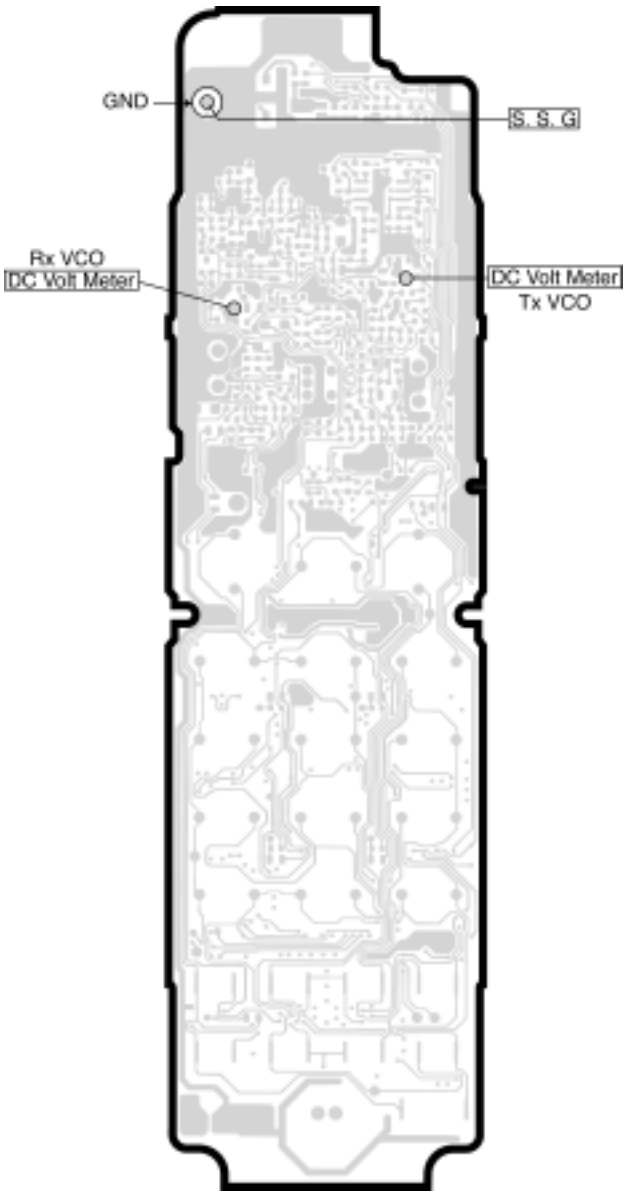
TOP PREVIOUS NEXT

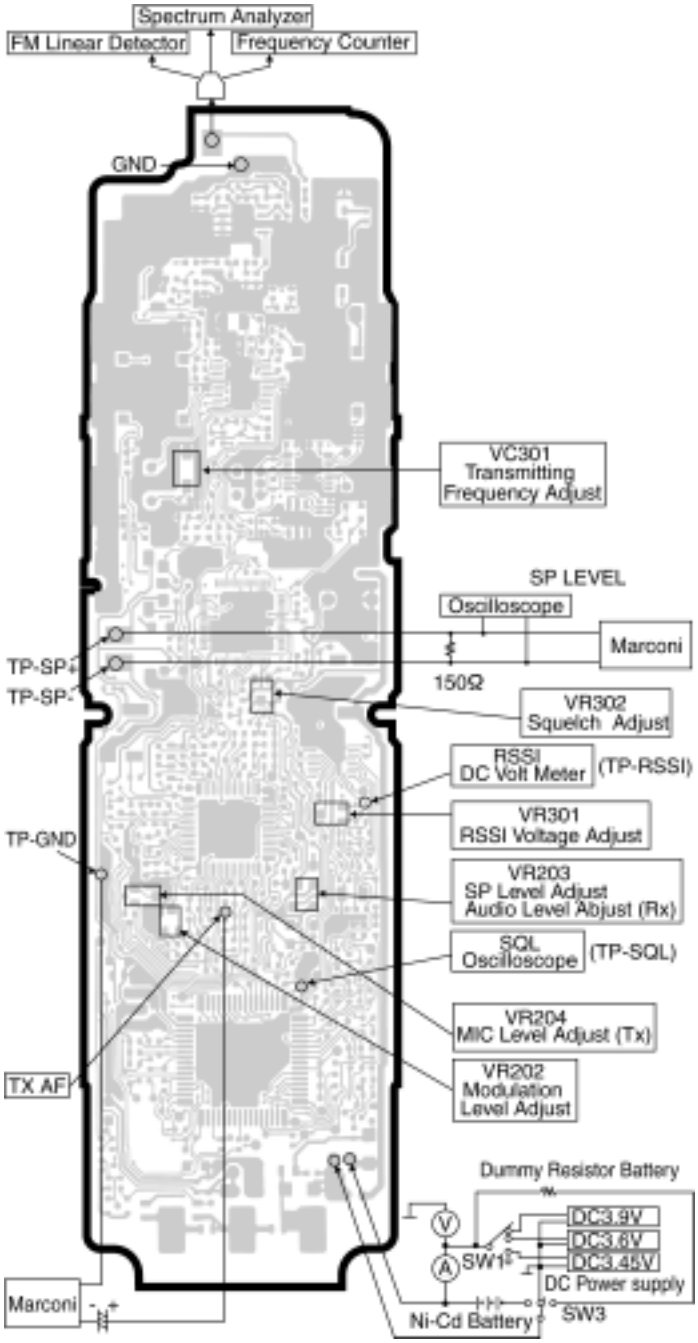
18.1 Handset Preparation

Please perform the following steps to prepare the HANDSET for alignment. Please refer to the HANDSET REFERENCE DRAWING for connection and test point locations.

1. Remove battery cover and battery.
2. Remove both screws at the case bottom.
3. Grabbing hold of the back near the bottom, gently pry off the back of the case. Remove antenna terminal and unsolder antenna lead.
4. Remove the antenna mounting screw, and pull out the antenna.
5. Remove the top P.C.Board mounting screw.
6. Unsolder both speaker connections on P.C.Board.
7. Remove the HANDSET P.C.Board.
8. Remove the keypad membrane.
9. Solder High Frequency Cable open end to ANT and RF GND points.
10. Using the Digital Multimeter, measure DC VOLTS output on the Telephone Analyzer. Adjust the output voltage to 3.9V DC.
11. Solder battery connection wires at the points shown in the HANDSET REFERENCE DRAWING. Solder the positive lead to TP-VDD, towards the component side of the P.C.Board. Solder the negative lead to the TP-Vss. DO NOT APPLY POWER TO THE HANDSETAT THIS TIME!!!!!!
12. Solder a small, insulated piece of wire to GND as well.
13. Solder 1 isolation capacitor's positive lead to SP+ test point (TP4).
14. Solder a small, short, insulated wire to MIC test point (TP8).
15. Lay the keypad membrane over the keypad switch contacts.

18.2 Handset Reference Drawing





TOP PREVIOUS NEXT

18.3 Symptom/Remedy Table

If you have one of the listed symptoms, please refer to this table and make the appropriate adjustments.

SYMPTOM	REMEDY
Does not link with BASE UNIT	Adjust Items (B), (C) and (E).
Speaker level is unstable	Adjust Item (A).
TX sound is unstable	Adjust Item (D).

18.4 Handset Adjustment Preparation

Please perform the following procedure before starting the Adjustment Procedure. You only have to perform this procedure only once to complete all Items, but you will have to perform this procedure to make an individual Adjustment Item.

1. You will need all equipment listed in the Item's EQUIPMENT section.
2. Setup all equipment as specified in the Item's PROCEDURE section SETUP portion.
3. Apply power to the HANDSET, and press TALK key when the base unit is not to be powered on.
4. Press 5, 8 and 0 keys at the same time.
5. Release the 3 keys. You should hear the HANDSET beep. If you do not hear a beep, remove the power from the HANDSET and repeat the last 2 steps.
6. Press the INTERCOM key, then press the TALK key. HANDSET should now be in TEST MODE (CH 1 TALK). The TALK LED should be on. If the HANDSET is not in TEST MODE, remove the power and repeat the last 3 steps.
7. The output power switches "Low", "Low", "High" at every pressing "8". (Initial setting: "Low") (Pressing "8" twice: "High")
8. "SS mode" switches ON/OFF at every pressing "0". (Initial Setting: ON)
9. Press "0" key twice when the "SS" is not synchronized during reception test.
10. Remove the keypad membrane and lay it aside.

18.5 Adjustment Procedure

ADJUSTMENT ITEM DESCRIPTION	(A) Standard Frequency (Tx Test)
EQUIPMENT	**Marconi** SETUP Put in Transmitter Test mode. **SS Mode of handset: OFF** (Follow the procedure (8).) **Output power of handset: "High"** (Follow the procedure (7).) Connect High Frequency Cable to right RF connector.
PROCEDURE	Check Marconi **TX FREQ** equals **906.640 MHz ± 0.003 MHz**. When value is overed **909.640 MHz ± 0.003 MHz**, Adjust at VC301.

ADJUSTMENT ITEM DESCRIPTION	(B) SP Output (Rx Test)
EQUIPMENT	**ESG-D3000A (E4432B)** SETUP: **FREQ 2402.08 MHz** **Amplitude –30dBm** **(FM)** **FM Rate 1.000 kHz I/Q :ON** **FM Dev. 24.0 kHz I/Q Source :Ext I/Q** **PN input from external I terminal** **SS Mode of handset: ON** (Follow the above-mentioned procedure (8).) High Frequency Cable to left RF Connector. Audio Cable positive lead to isolation capacitor, negative lead to **GND**, BNC end to AF INPUT
PROCEDURE	Set handset volume to medium. Adjust **VR203** until **AF VOLTS** equals **–12dBm ± 1dBm** Note This voltage reading is with speaker or load attached to the HANDSET P.C.Board.

ADJUSTMENT ITEM DESCRIPTION	(C) RSSI Level Adjustment (Rx Test)
EQUIPMENT	**ESG-D3000A (E4432B)** SETUP: **Fregency 2402.08MHz** **Amplitube –30dBm** **(FM)** **FM Rate 1.0kHz** **FM Dev. 24kHZ** **(I/Q)** **I/Q:ON** **I/Q Source:Ext I/Q** PN input from external I terminal **SS Mode of handset: ON** (Follow the above-mentioned procedure (8).)
PROCEDURE	Adjust VR301 to make the voltage of TP-RSSI **1.5V ± 0.2V**.

ADJUSTMENT ITEM DESCRIPTION	(D) Squelch (RX sensitivity confirmation and squelch adjustment) (Rx Test)
EQUIPMENT	**ESG-D3000A (E4432B)** **FREQ 2402.08 MHz** **Amplitude –30 dBm** **(FM) (I/Q)** **FM Rote 1.000 kHz I/Q ON** **FM Dev. 12 kHz I/Q Source:Ext I/Q** **PN input from external I terminal** **SS Mode of handset: ON** (Follow the above-mentioned procedure (8).) Install 150Ω resistor (150Ω = SP load) or move the SP wires. It can be remedied either one, but not both at the same time. **Oscilloscope** SETUP X1 probe connected to INPUT 1. Probe ground connected to **GND**. TIME/DIV 1ms VOLT/DIV 1V Auto trigger
PROCEDURE	On Model 2945, press SINAD until the display shows ESG-D3000A (E4432B). Lower Amplitude **LEVEL** at SINAD 12 dB and confirm that Amplitude is less than **–105dBm**. Attach the oscilloscope probe to TP-SQL. When Amplitude is set at –95 dBm, confirm that the signal of TP-SQL is Low. After that, set Amplitude at –120 dBm, and confirm that the signal of TP-SQL is High. When level is NG, adjust VR302 following Squelch Check item 5 of Base Unit RF. (Refer to page 18)

ADJUSTMENT ITEM DESCRIPTION	(E) MIC Input (MIC Modulation) (Tx Test)
EQUIPMENT	**MARCONI** **SET UP:** Transmitter. test mode **AFGEN** **FREQ 1.000 KHz** **LEVEL –40 dBm** **SS Mode of handset: OFF** (Follow the procedure (8).) The capacitor used must be greater than 1 μ F (c ≧ μ F). Connect Audio Cable positive lead to **TX AF**, negative lead to **GND**, BNC end to AF GEN OUTPUT. After adjusting when talking over handset, level that flows into circuit is low, adjust VR204. (Usually do not adjust VR204.)
PROCEDURE	Adjust **VR202** until Marconi **MOD LEVEL** equals **24 kHzdev. ± 0.5 kHz**

Once aligned, please perform the following procedure.

1. Disconnect all equipment and solder connections. Use solder wick to clean up any solder you added.

2. Install the keypad membrane on top of the HANDSET keys.

3. Install the HANDSET P.C.Board.

4. Solder speaker wires back onto the P.C.Board observing correct polarity.

5. If you will align Item (C) RX Input in BASE UNIT, then solder a short wire across the MIC leads. Remember to unsolder this wire after you completed the BASE UNIT alignment.

6. Insert antenna into the case.

7. Install antenna and top P.C.Board mounting screws and solder antenna connection.

8. Install case back and bottom mounting screws.

9. DO NOT INSTALL THE BATTERY AT THIS TIME!!!!!!

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19 TERMINAL GUIDE OF IC'S TRANSISTORS AND DIODES

TOP PREVIOUS NEXT

19.1 Base Unit

19.2 Handset

19.3 For Schematic Diagram (Base Unit)

19.4 For Schematic Diagram (Handset)

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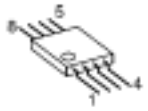
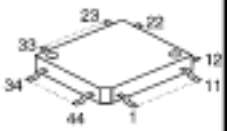
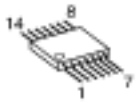
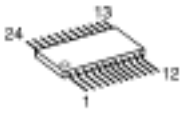
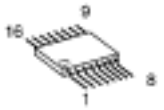
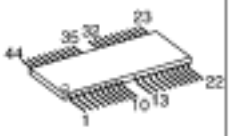
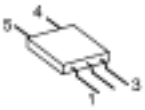
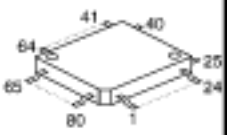
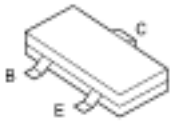
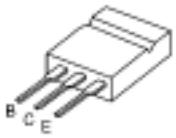
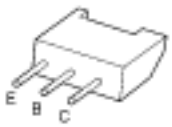
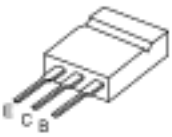
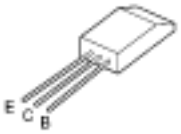
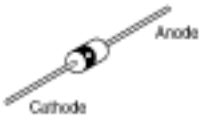
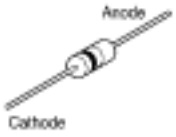
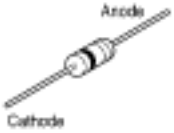
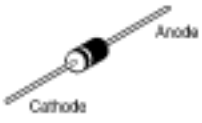
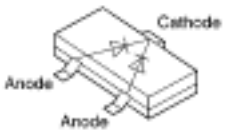
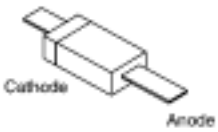
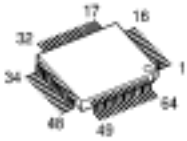
19.1 Base Unit

 PQVIJM4560M PQVINJM2360M	 AN6183SAE1	 PQVIMX93002F
 PQVIT4069UBF	 AN6165SB	 PQVIMC4094BF
 PQVIKM29N4TC	 AN6123MS	 PQVI53MF5020 PQVID6471A2
 2SD601R, 2SB709A, PQVTDTC143TK 2SD1819A	 2SD2137	 2SD1991A 2SD1994A
 2SD2136, 2SB1416	 2SA1627	 PQVDS1ZB40F1

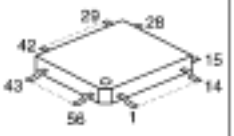
 1SS119	 MA4180, MA4150 MA4100	 MA4036, MA4056 MA4047
 PQVDS5688G	 MA153	 PQVDEC10
 PQVDSLN210VC	 LNJ301MPUJA	

TOP PREVIOUS NEXT

19.2 Handset

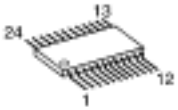


MN151233KA1

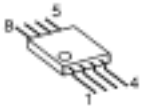


AN6122FA

PQVITK11230M
PQVIMRF2006R
PQVTAT32063T
PQVIPC8109TB

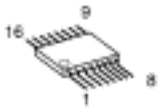


PQVIM64078GP

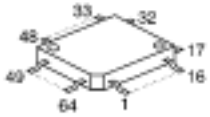


PQVIMC3143D

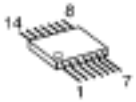
PQVIMRF0916T



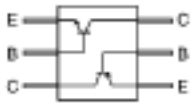
PQVITA31161F



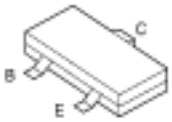
PQVIPD961001



PQVINJM2901V

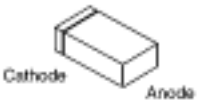


2SC5408

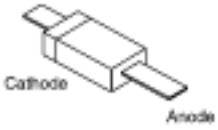


2SD1819A, PQVTDTB123E, PQVTDTC144TU
2SB1218A, PQVTDTC143E, PQVTD123J106
2SA4096QT106, 2SC4099NT106, 2SC4098QT106
2SA1036KQ146

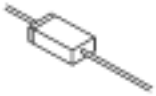
2SC4536



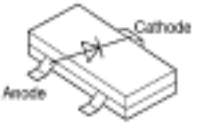
PQVDPTZTE25
MA8150, MA110



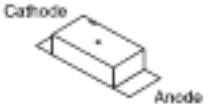
PQVD1SR154



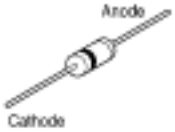
PQVDRB751V4



MA141WK



PQVDBR1112H
PQVDRB751V4



MA110

19.3 For Schematic Diagram (Base Unit)

TOP PREVIOUS NEXT

Notes:

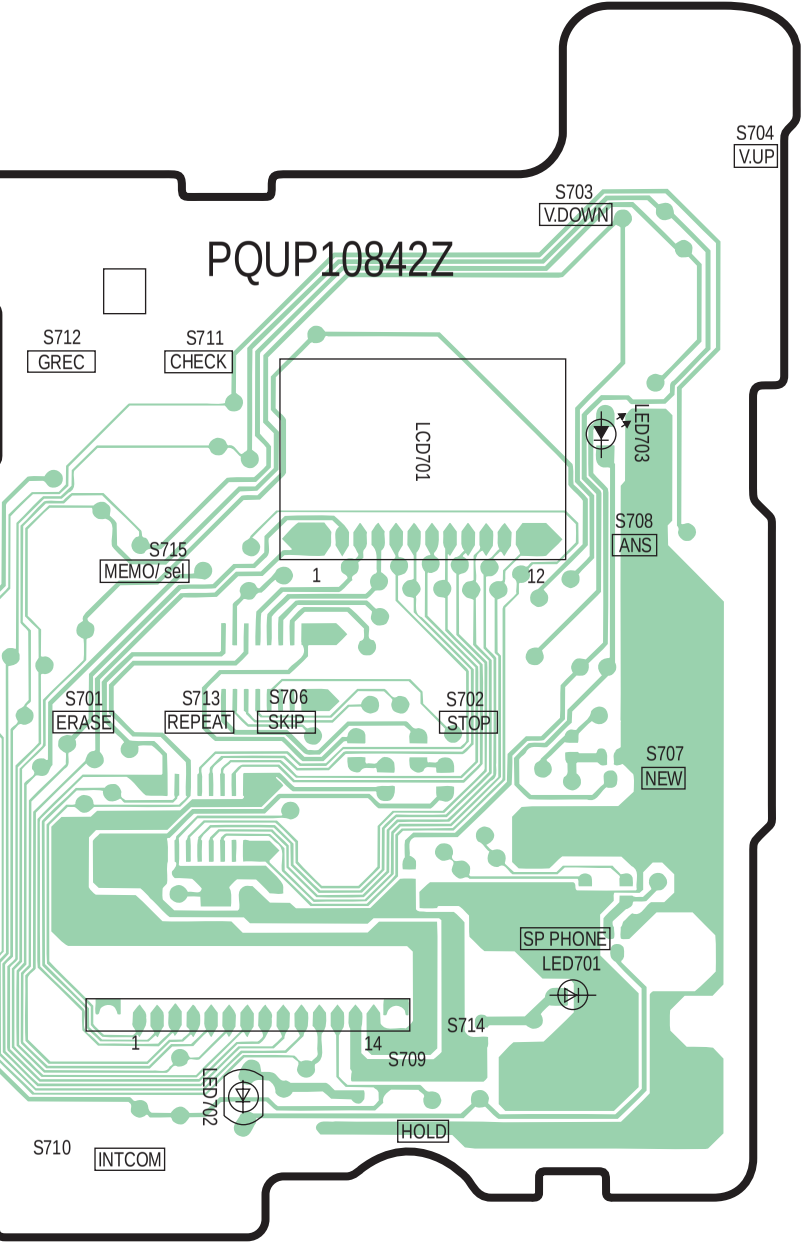
1. DC voltage measurements are taken with voltmeter from the negative voltage line.

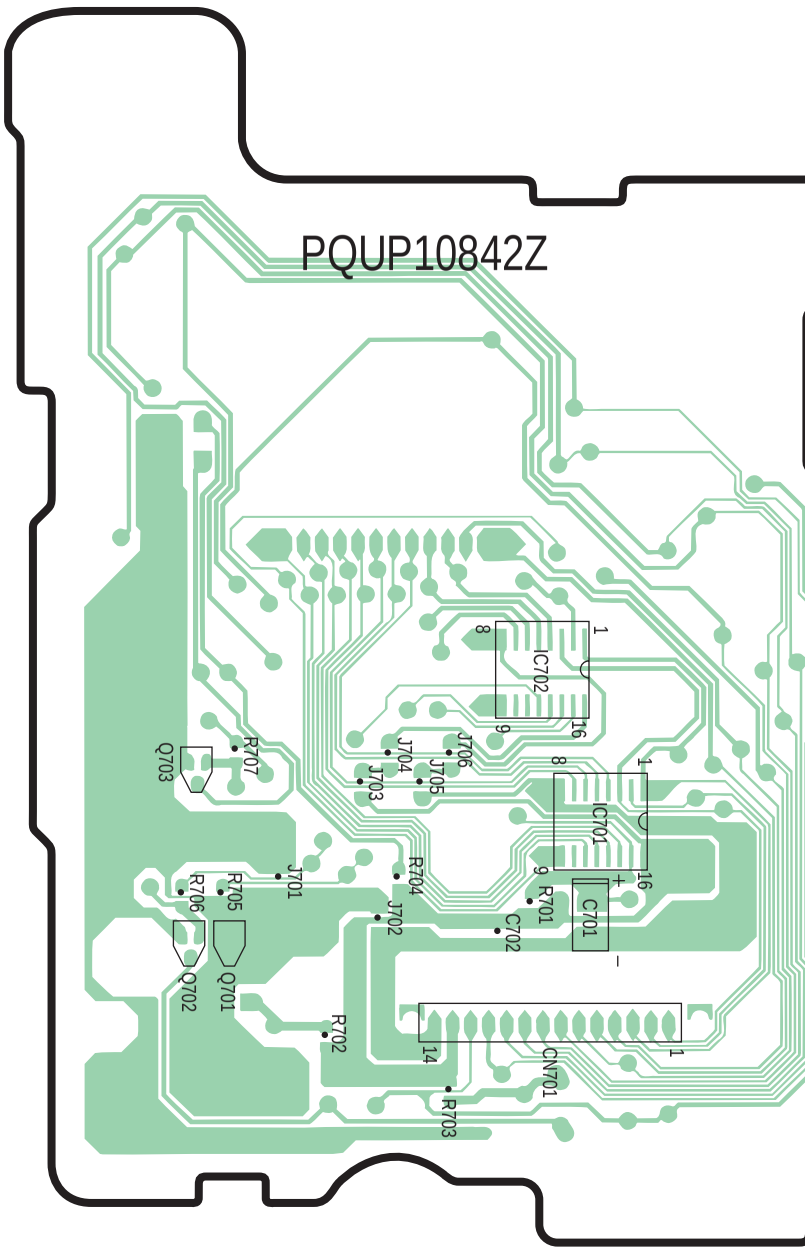
Important Safety Notes:/Components identified by mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specifiedparts.

This schematic diagram may be modified at any time with the development of new technology.

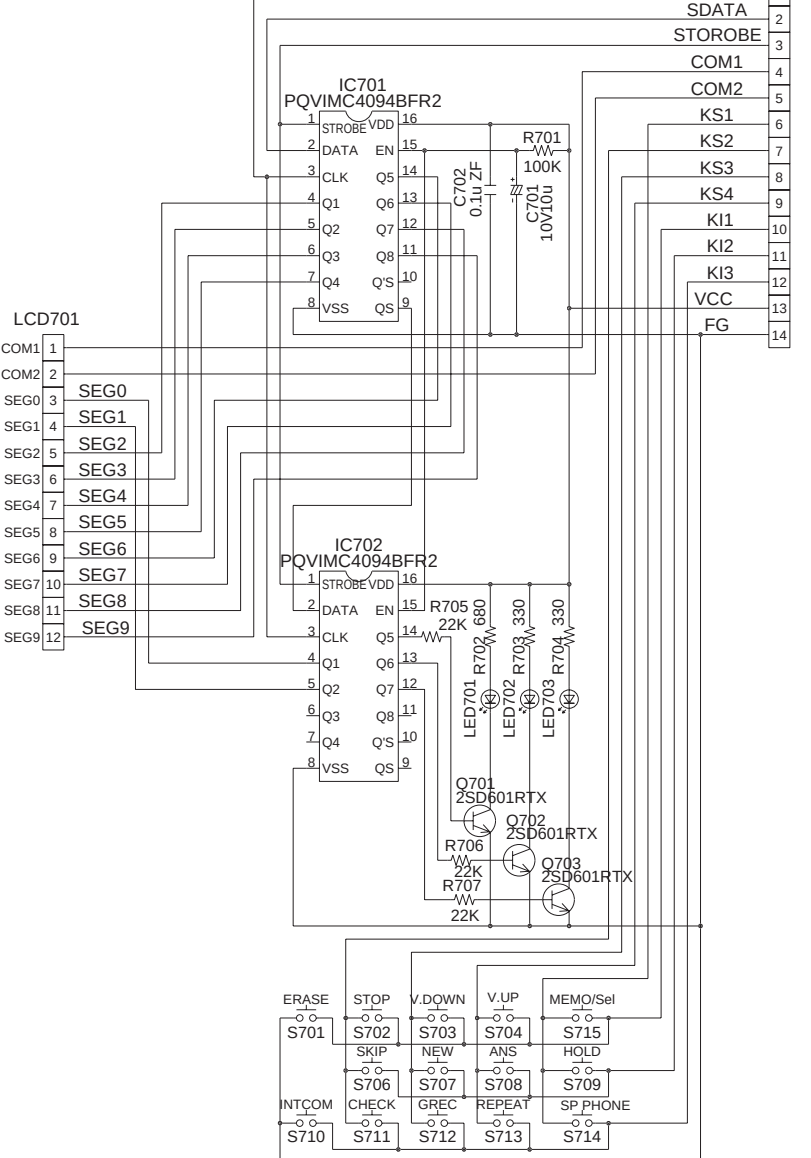
TOP PREVIOUS NEXT

20 CIRCUIT BOARD (Operational P.C.Board)


PQUP10842Z
S704
V.UP
S703
V.DOWN
S712
GREC
S711
CHECK
LCD701
LED703
S715
MEMO/ sel
1
12
S708
ANS
S701
ERASE
S713
REPEAT
S706
SKIP
S702
STOP
S707
NEW
SP PHONE
LED701
1
14
S714
S709
LED702
S710
INTCOM
HOLD


PQUP10842Z
IC702
IC701
Q703
R707
J704
J706
J703
J705
J701
R704
R706
R705
R701
C701
C702
J702
Q702
Q701
R702
CN701
R703

21 SCHEMATIC DIAGRAM (Operational P.C.Board)

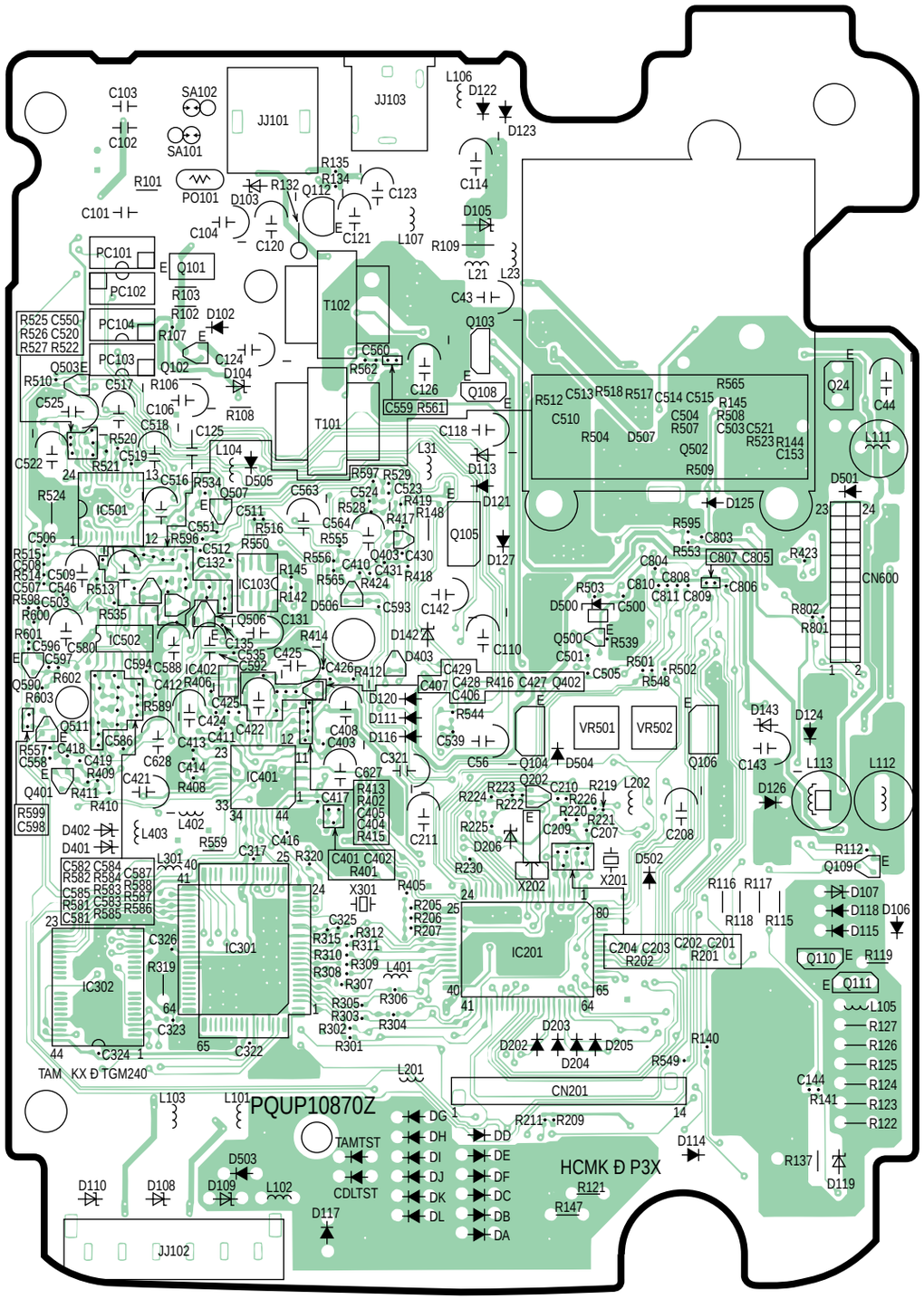

SDATA
STOROBE
COM1
COM2
KS1
KS2
KS3
KS4
KI1
KI2
KI3
VCC
FG
IC701
PQVIMC4094BFR2
STROBE
DATA
CLK
Q1
Q2
Q3
Q4
VSS
VDD
EN
Q5
Q6
Q7
Q8
Q'S
QS
R701
100K
C702
0.1u ZF
C701
10V10u
LCD701
COM1
COM2
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
IC702
PQVIMC4094BFR2
R705
22K
R702
680
R703
330
R704
330
LED701
LED702
LED703
Q701
2SD601RTX
Q702
2SD601RTX
Q703
2SD601RTX
R706
22K
R707
22K
ERASE
STOP
V.DOWN
V.UP
MEMO/Sel
S701
S702
S703
S704
S715
SKIP
NEW
ANS
HOLD
S706
S707
S708
S709
INTCOM
CHECK
GREC
REPEAT
SP PHONE
S710
S711
S712
S713
S714

22 CIRCUIT BOARD (Base Unit)

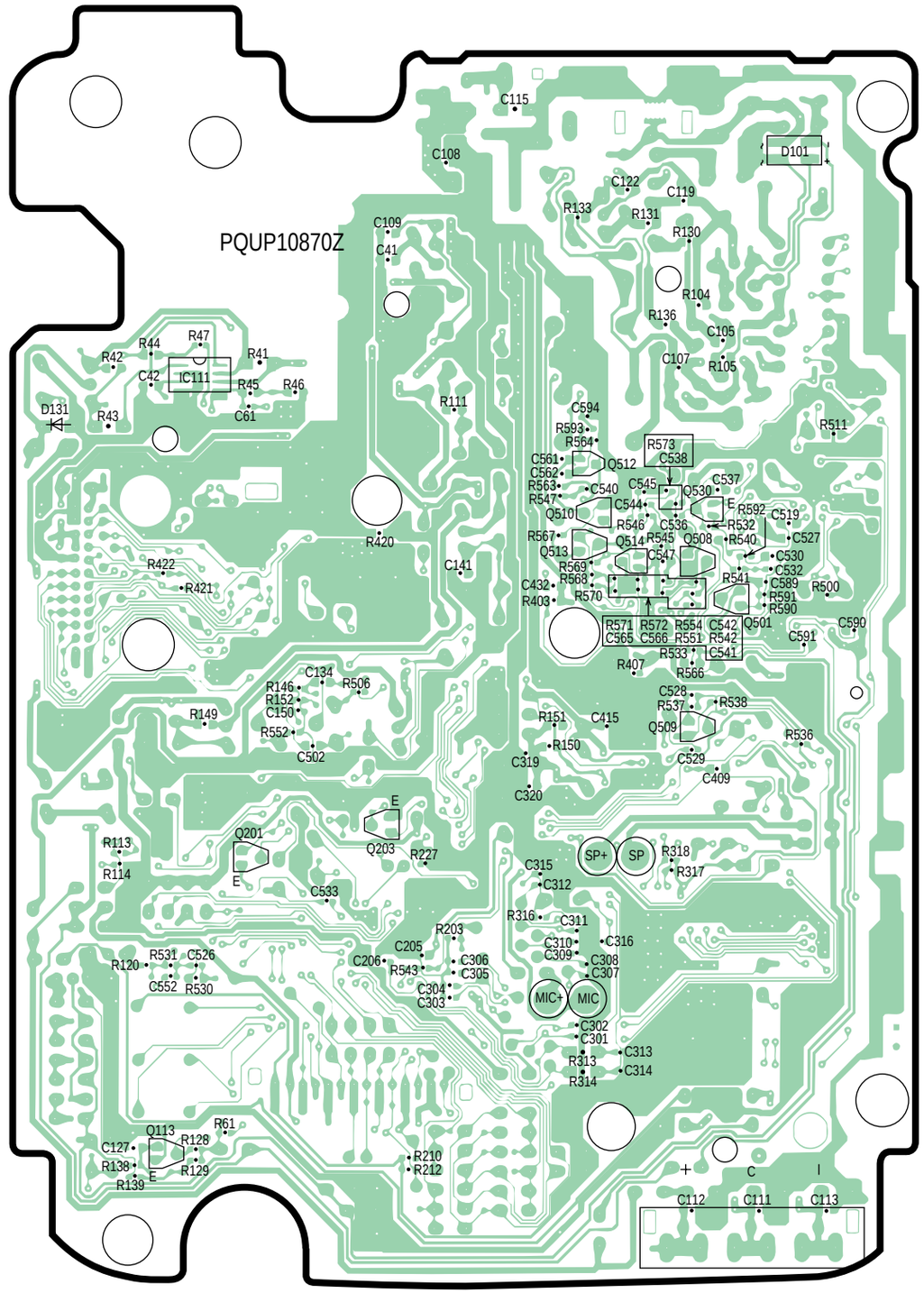
TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

(Component View)



(Flow Solder Side View)



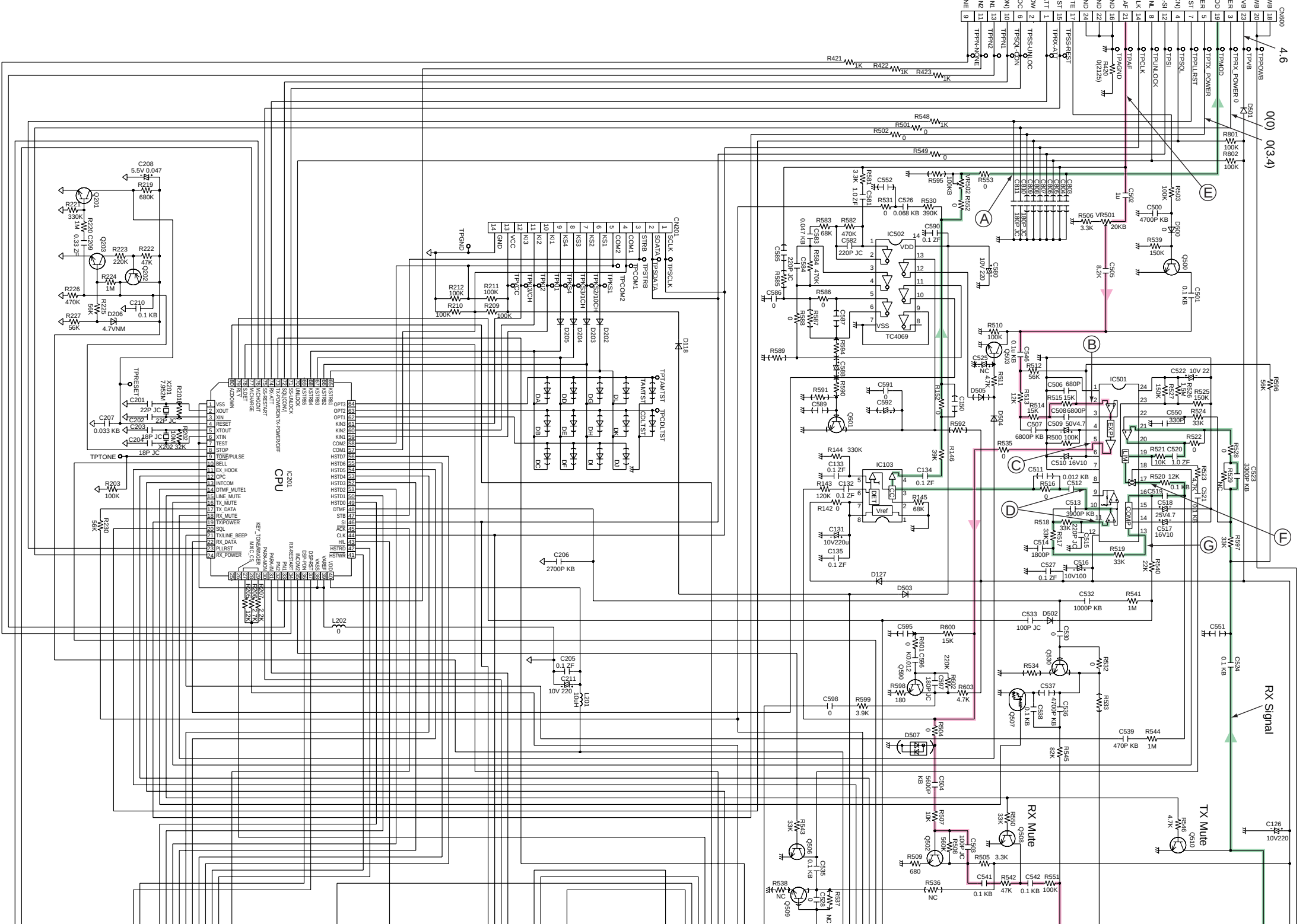
22.1 MEMO

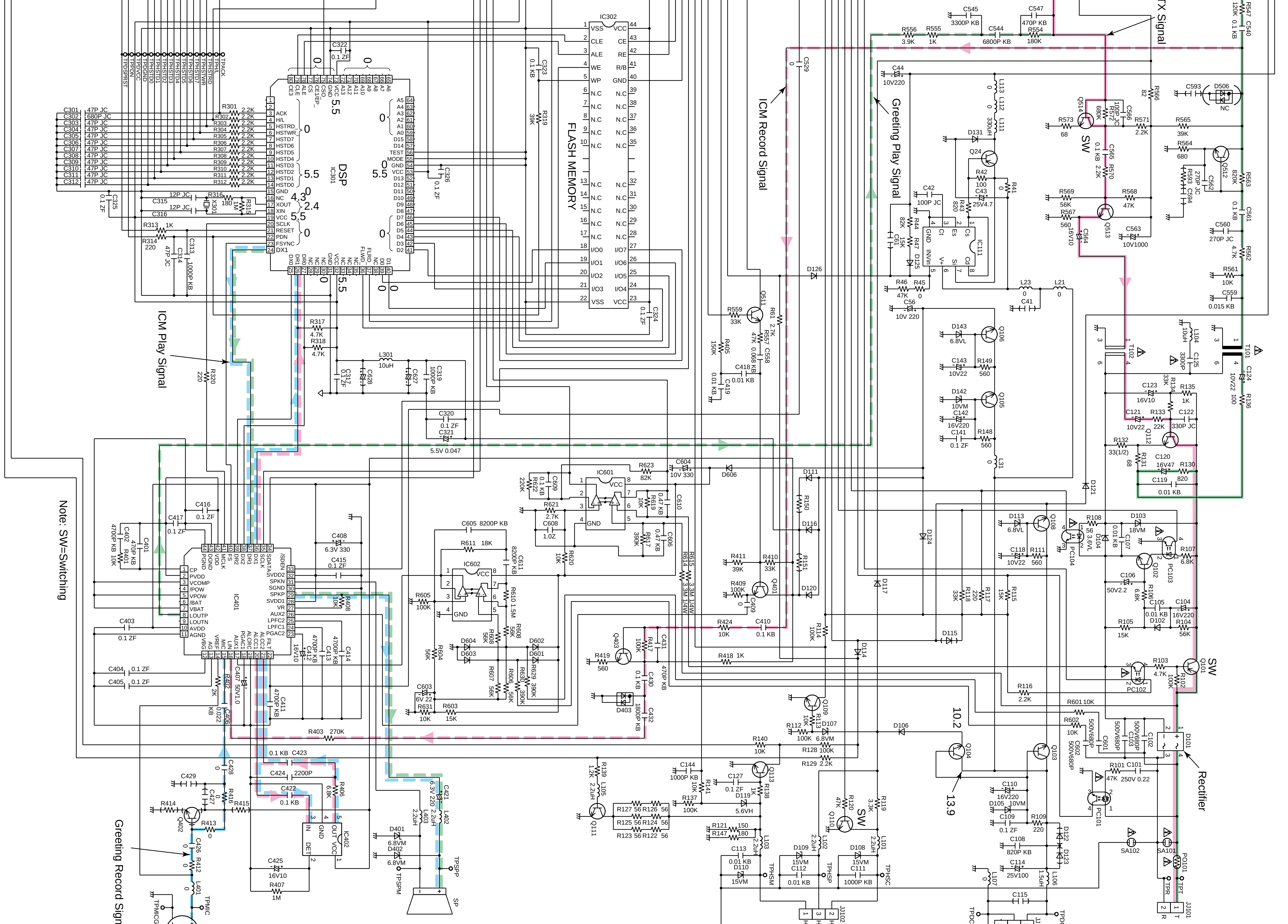
TOP PREVIOUS NEXT

23 SCHEMATIC DIAGRAM (Base Unit)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT


CPU
IC201
IC502
IC501
IC103
TC4069
RX Signal
RX Mute
TX Mute
4.6
0(0)
0(3.4)



TX Signal
ICM Record Signal
Greeting Play Signal
ICM Play Signal
Greeting Record Sign
Note: SW=Switching
Rectifier
DSP
IC301
FLASH MEMORY
IC302
IC401
IC402
IC601
IC602
IC111
SW
10.2
13.9
TPSPP
TPSPM
SP
TPMIC
TPMICG
TPHSM
TPHSP
TPHSC
TPDC
TPT
TPR
J101
J102

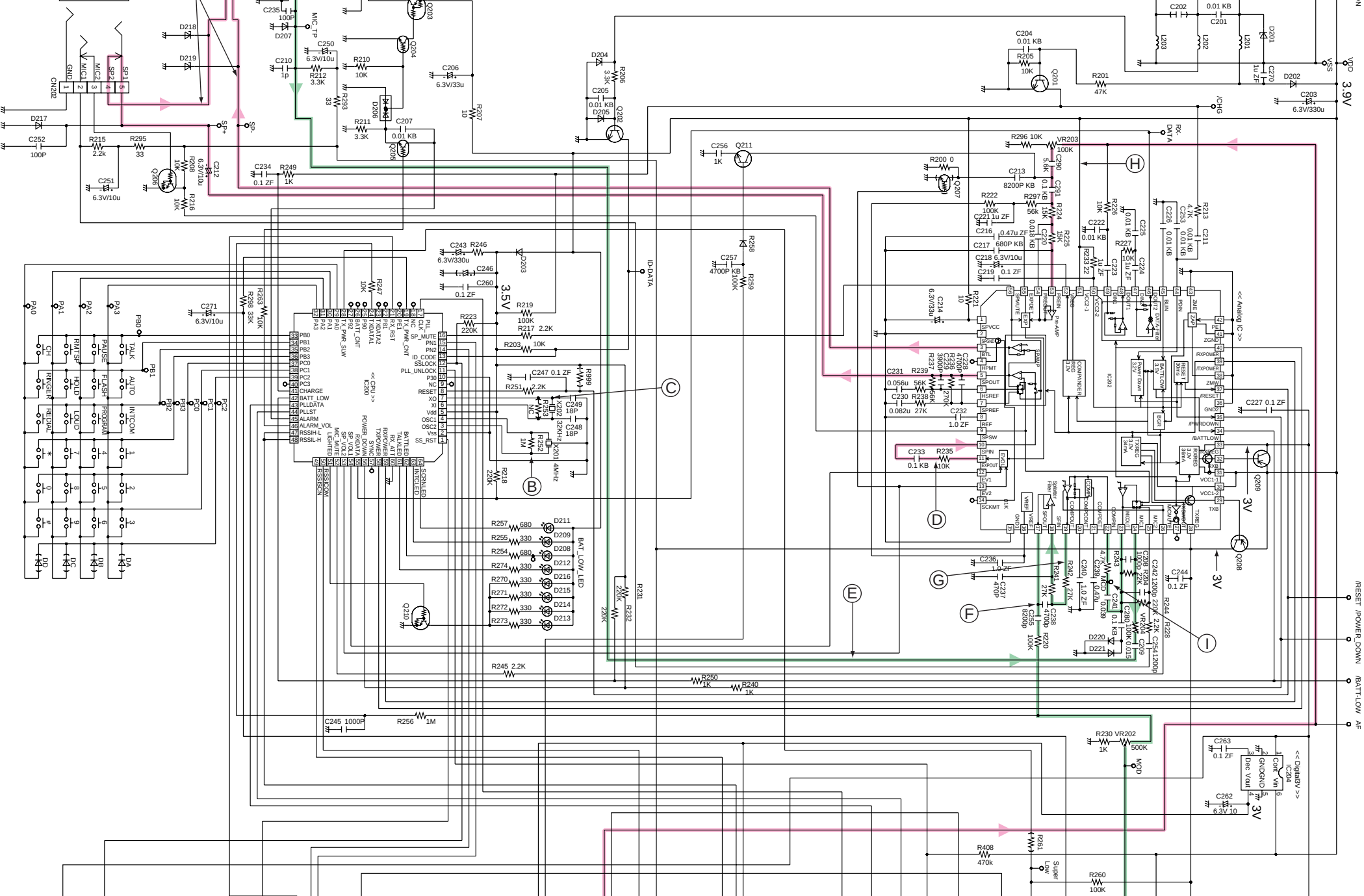
23.1 MEMO

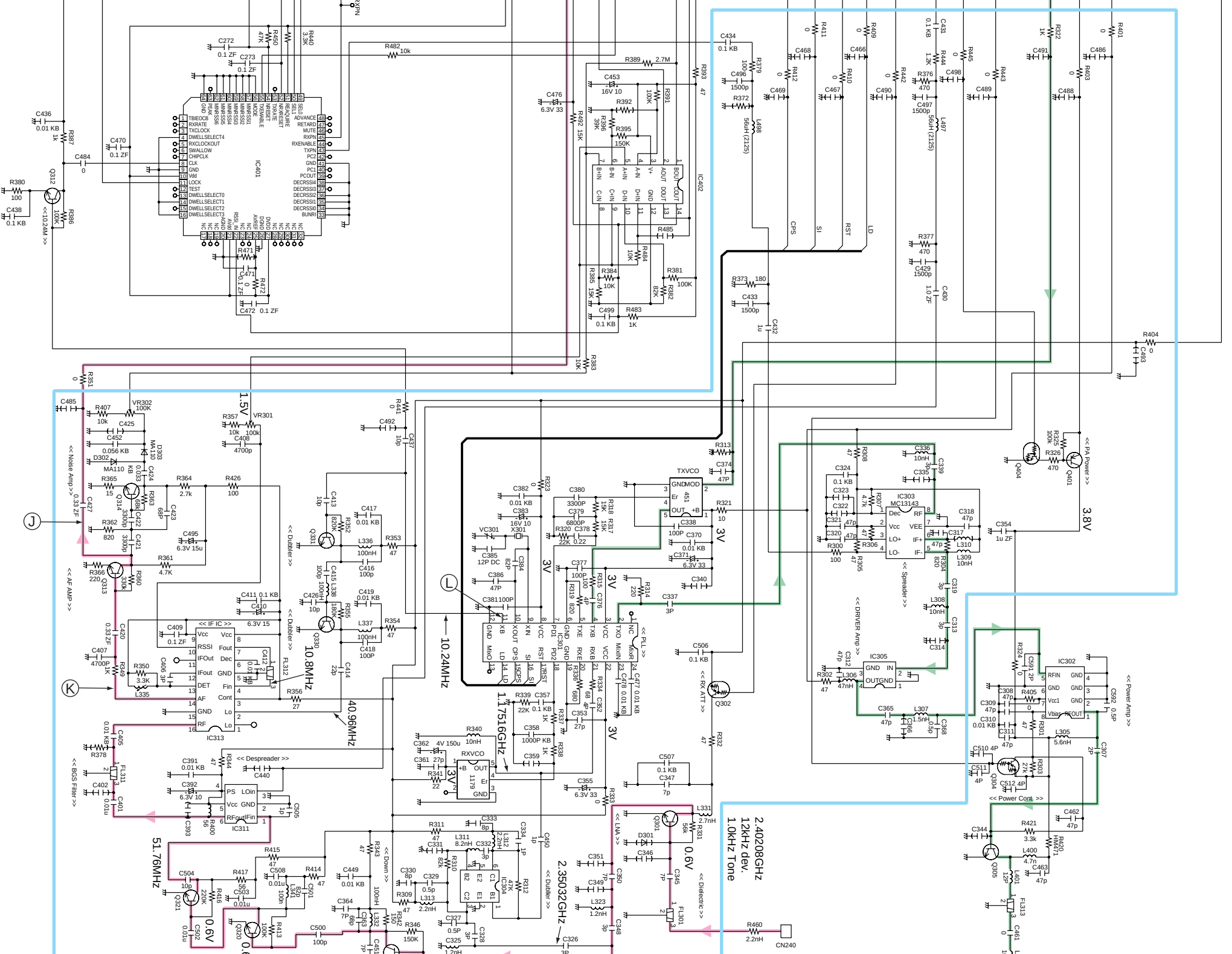
TOP PREVIOUS NEXT

24 SCHEMATIC DIAGRAM (Handset)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT


CN202
GND
MIC1
MIC2
SP2-
SP1+
D218
D219
D217
C252 100P
R215 2.2K
R295 33
C251 6.3V/10u
Q208
R208 10K
R216 10K
C212 6.3V/10u
SP+
SP-
C235 100P
MIC_TP
D207
C250 6.3V/10u
R212 3.3K
C210 1p
R210 10K
Q203
Q204
C206 6.3V/33u
R207 10
D206
R211 3.3K
C207 0.01 KB
Q205
C234 0.1 ZF
R249 1K
D204 3.3K
R206
C205 0.01 KB
D205
Q202
C256 1K
Q211
R200 0
Q207
C213 8200P KB
R222 100K
R297 56k
R224 15K
R225 15K
C221 1u ZF
C216 0.47u ZF
C220 0.018 KB
C217 680P KB
C218 6.3V/10u
C219 0.1 ZF
R296 10K
VR203 100K
C290 5.0K
C291 0.1 KB
R226 10K
C222 0.01 KB
C223 1u ZF
R227 10K
C224 1u ZF
C225 0.01 KB
R213 4.7K
C253 0.01 KB
C226 0.01 KB
C211 0.01 KB
R233 22
C214 6.3V/33u
R221 10
C227 0.1 ZF
C231 0.056u
R239 56K
R237 3900P
C235 4700P
C236 270K
C230 0.082u
R238 56K
C232 27K
1.0 ZF
C233 0.1 KB
R235 10K
C228 4700P KB
C229 100K
C202 0.01 KB
C201
L203
L202
L201
D201
C270 1u ZF
D202
C203 6.3V/330u
C204 0.01 KB
R205 10K
Q201
R201 47K
/CHG
RX-DATA
H
C243 R246 6.3V/330u
C246
C260 0.1 ZF
3.5V
R219 100K
R217 2.2K
R203 10K
R223 220K
C247 0.1 ZF
R999
R251 2.2K
C249 18P
C248 18P
X202 32KHz
X201 4MHz
R252 1M
R218 220K
B
C
D
E
F
G
I
R257 680
R255 330
R254 680
R274 330
R270 330
R271 330
R272 330
R273 330
D211
D209
D208
D212
D216
D215
D214
D213
BAT_LOW_LED
Q210
R231 220K
R232 220K
R245 2.2K
R250 1K
R240 1K
C245 1000P
R256 1M
R408 470k
R261
Super Low
R260 100K
R230 VR202 1K 500K
MOD
C263 0.1 ZF
C262 6.3V 10
<< DigitalV >>
IC204
Cont
Vin
GNDGND
Dec
Vout
3V
3.9V
VDD
VSS
ID-DATA
PA0
PA1
PA2
PA3
PB0
PB1
PB2
PB3
PC0
PC1
PC2
PC3
CHARGE
BATT_LOW
PLLDATA
PLLST
ALARM
ALARM_VOL
RSSIH-L
RSSIL-H
<< CPU >>
IC200
C271 6.3V/10u
R263 33K
R298 10K
R247 10K
CH
RINGER
REDIAL
RMTSP
HOLD
LOUD
PAUSE
FLASH
PROGRAM
TALK
AUTO
INTCOM
<< Analog IC >>
IC202
Power Down 3.2V
BATTLOW 3.0V
RESET 90ms
TXPREG 3.0V 30mA
RXPREG 3.0V 10mA
Q209
Q208
3V
/RESET
/POWER_DOWN
/BATT-LOW
AF


IC401
IC402
IC313
IC311
IC303
MC13143
IC305
IC302
TXVCO
RXVCO
IC304
1.5V
3V
3.8V
0.6V
10.8MHz
40.96MHz
10.24MHz
1.17516GHz
2.35032GHz
2.40208GHz
12kHz dev.
1.0kHz Tone
51.76MHz
<< Noise Amp >>
<< AF AMP >>
<< IF IC >>
<< Dubbler >>
<< Despreader >>
<< BGS Filter >>
<< PLL >>
<< RX ATT >>
<< LNA >>
<< Down >>
<< Dielectric >>
<< Spreader >>
<< DRIVER Amp >>
<< PA Power >>
<< Power Amp >>
<< Power Cont. >>
CPS
SI
RST
LD

24.1 MEMO

TOP PREVIOUS NEXT

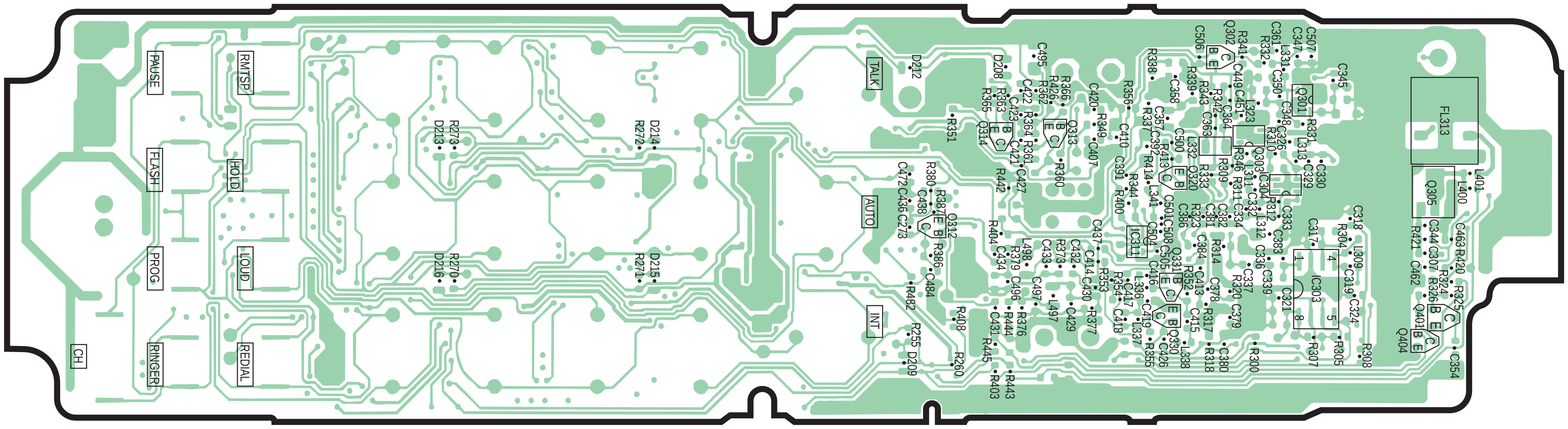
25 CIRCUIT BOARD (Handset)

TOP PREVIOUS NEXT

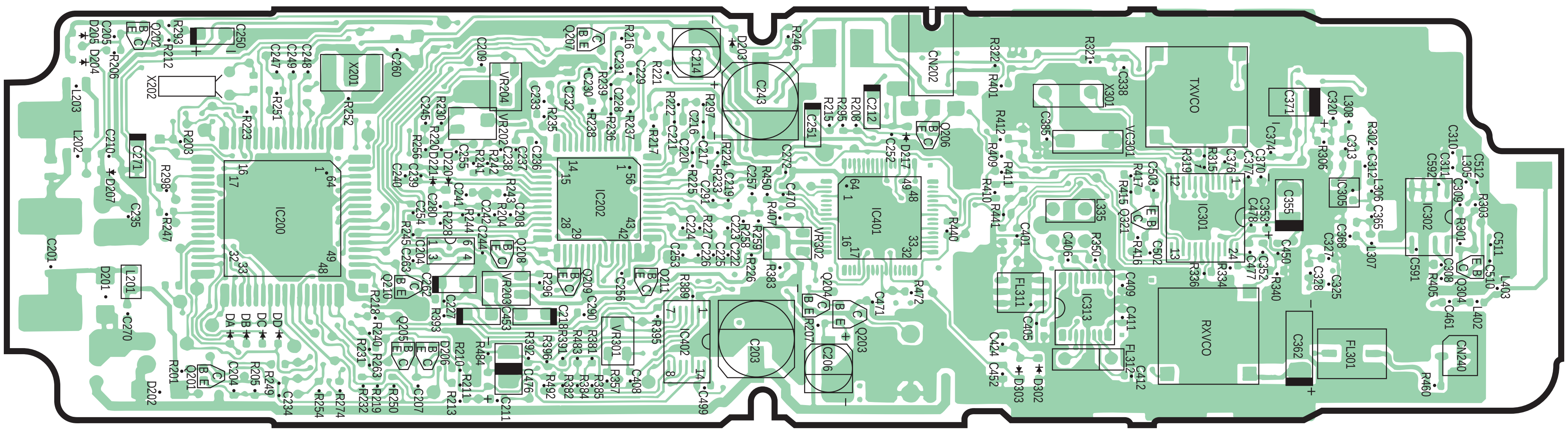
25.1 MEMO

TOP PREVIOUS NEXT

(Component View)



(Flow Solder Side View)



25.1 MEMO

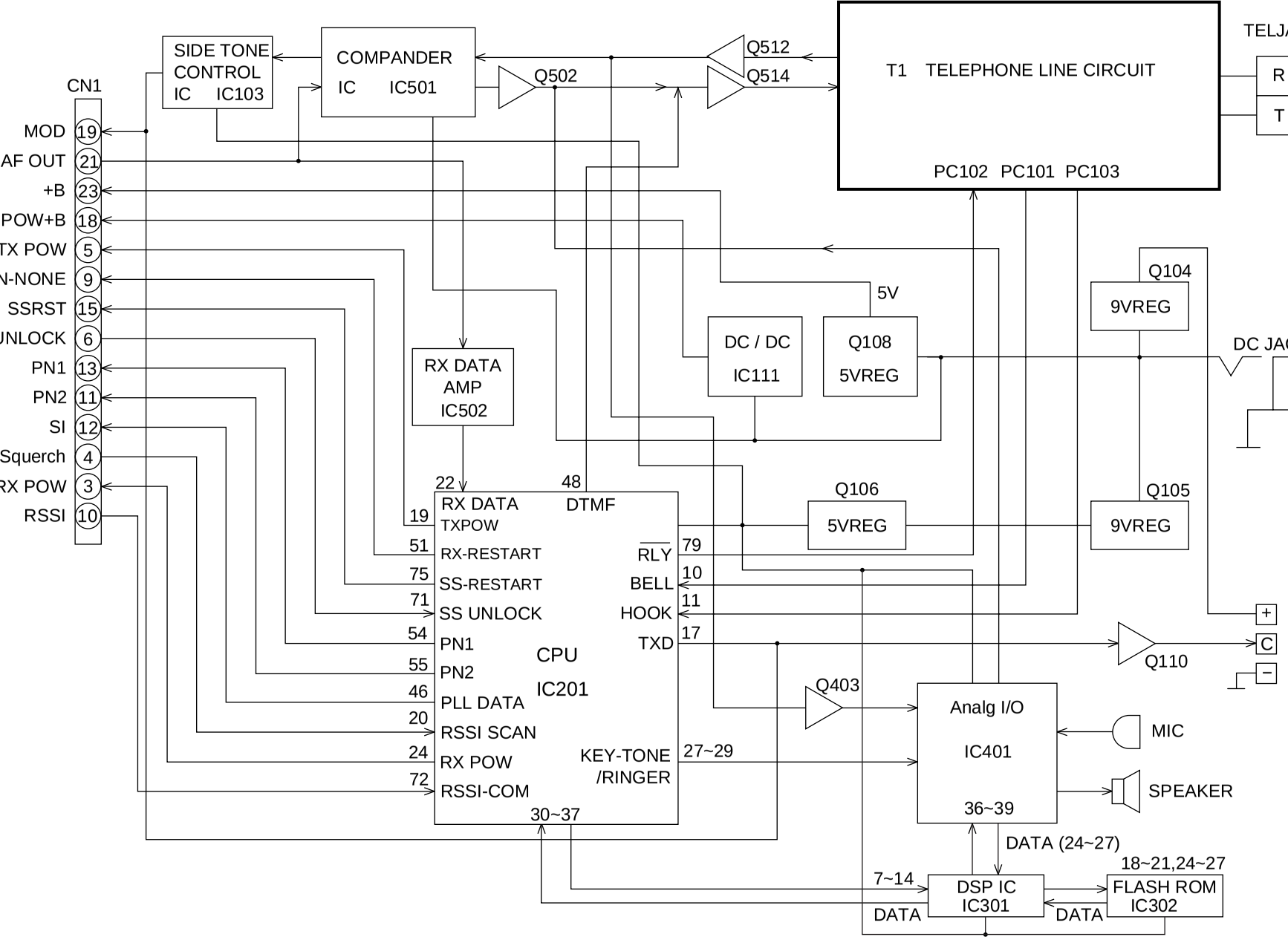
TOP PREVIOUS NEXT

26 BLOCK DIAGRAM (Base Unit)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

26.1 Main P.C. Board


CN1
MOD 19
AF OUT 21
+B 23
POW+B 18
TX POW 5
N-NONE 9
SSRST 15
UNLOCK 6
PN1 13
PN2 11
SI 12
Squerch 4
RX POW 3
RSSI 10
SIDE TONE CONTROL IC IC103
COMPANDER IC IC501
Q502
Q512
Q514
T1 TELEPHONE LINE CIRCUIT
TELJ
R
T
PC102 PC101 PC103
5V
DC / DC IC111
Q108 5VREG
Q104 9VREG
DC JA
RX DATA AMP IC502
22
48
19 TXPOW
51 RX-RESTART
75 SS-RESTART
71 SS UNLOCK
54 PN1
55 PN2
46 PLL DATA
20 RSSI SCAN
24 RX POW
72 RSSI-COM
RX DATA
DTMF
RLY 79
BELL 10
HOOK 11
TXD 17
CPU IC201
30~37
Q106 5VREG
Q105 9VREG
Q110
+
C
−
Q403
Analg I/O IC401
36~39
MIC
SPEAKER
27~29
KEY-TONE /RINGER
DATA (24~27)
18~21,24~27
7~14
DSP IC IC301
FLASH ROM IC302
DATA
DATA

27 NEW CIRCUIT OPERATION (Base Unit)

TOP PREVIOUS NEXT

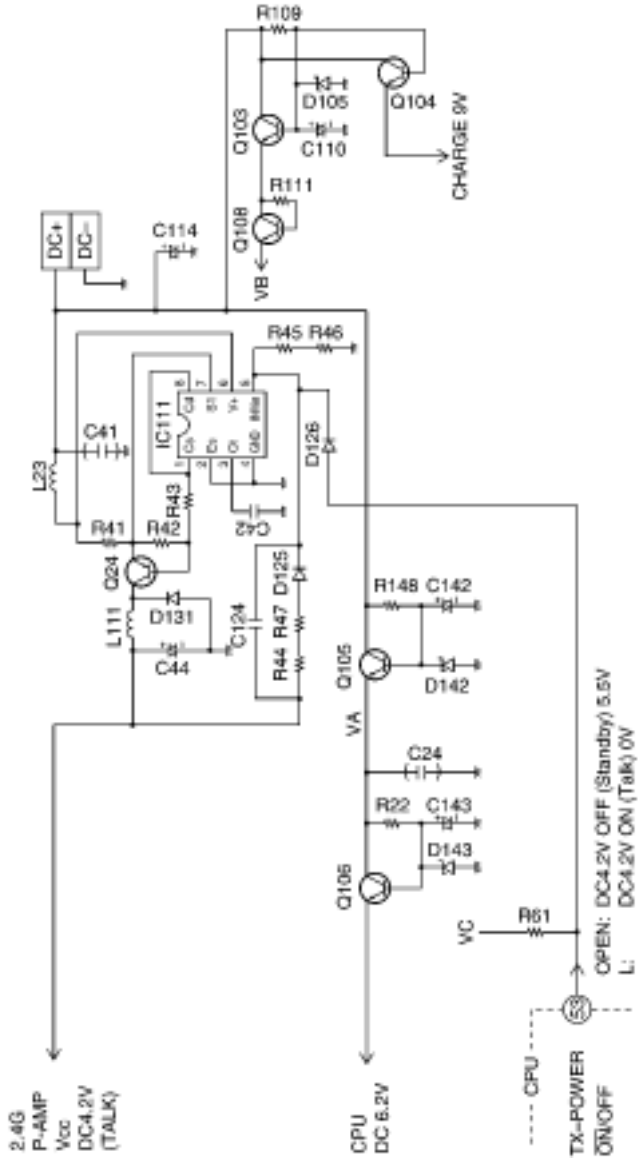
TOP PREVIOUS NEXT

27.1 Power Supply Circuit

TOP PREVIOUS NEXT

Various kinds of voltages are supplied to each part shown in the figure. IC111 is the IC of DC/DC converter. The DC voltage from AC adapter is switched ON/OFF at Q24. Then the voltage is decreased. Each output voltage of 4.2V isdivided at the resistors (R51, R50, R45, R46), then led to Pin 5 of IC111 to make the voltage at Pin 5 of IC111 (1.25V). The ripple of output voltage is decreased at L111, C44. The voltage of Pin 53 of CPU controls the power supply (4.2V) of 2.4G poweramplifier to switch ON only for the TALK with handset.

Circuit Diagram



TOP PREVIOUS NEXT

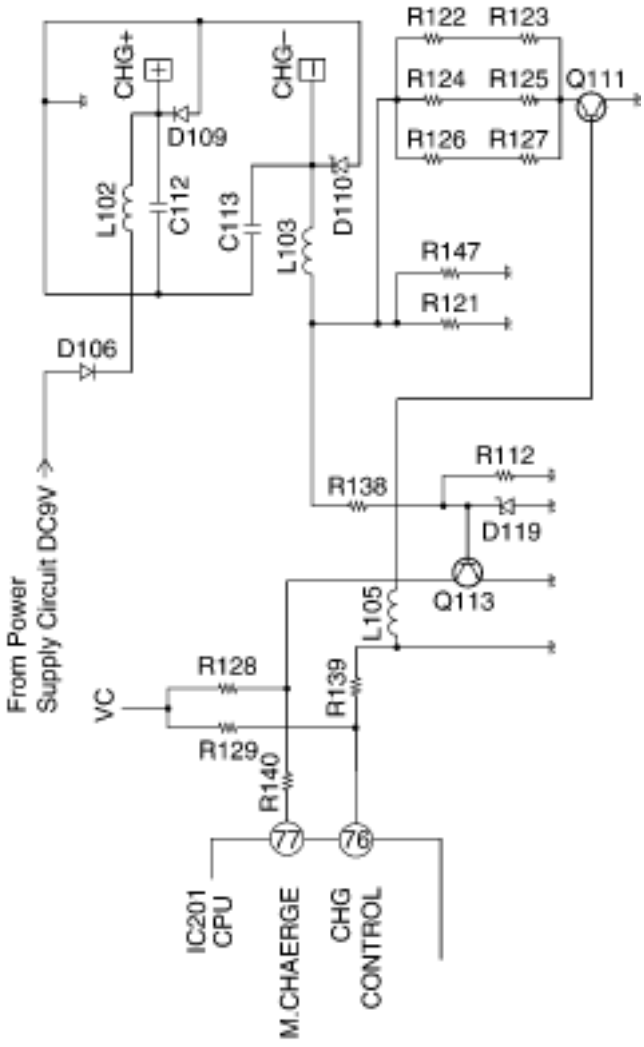
27.2 Charge Circuit

The power supply of the charge circuit is supplied from 9V of power supply circuit. The normal charge current is 130mA and charges for 15 hours. Then the current switches to 40mA to protect the overcurrent.

Normal Charge: 76 CPU is high and Q62 is on.

Trickle Charge: 76 CPU is low and Q62 is on.

Circuit Diagram



27.3 Bell Detector Circuit

When the Bell signal is input between T/R, the signal of which waveform is shaped through C101→ R101→ PC101 is input to pin 12 of the CPU IC201.

27.4 Telephone Line Interface

Circuit Operation:

ANSWER

In the idle mode, Q101 is open to cut the DC loop current and decrease the ring load. When ring voltage appears at the Tip (T) and Ring (R) leads (When the telephone rings), the AC ring voltage is transferred as follows:/T→ PO101→ PC101→ IC201pin 10./When the CPU detects a ring signal, Q101 turns on, thus providing an off-hook condition (active DC current flow through the circuit) and the following signal flow is for the voice signal./T→ PO101→ D101→ Q101→ T101pin 1→ T101 pin 3→ D104→ D101→ R

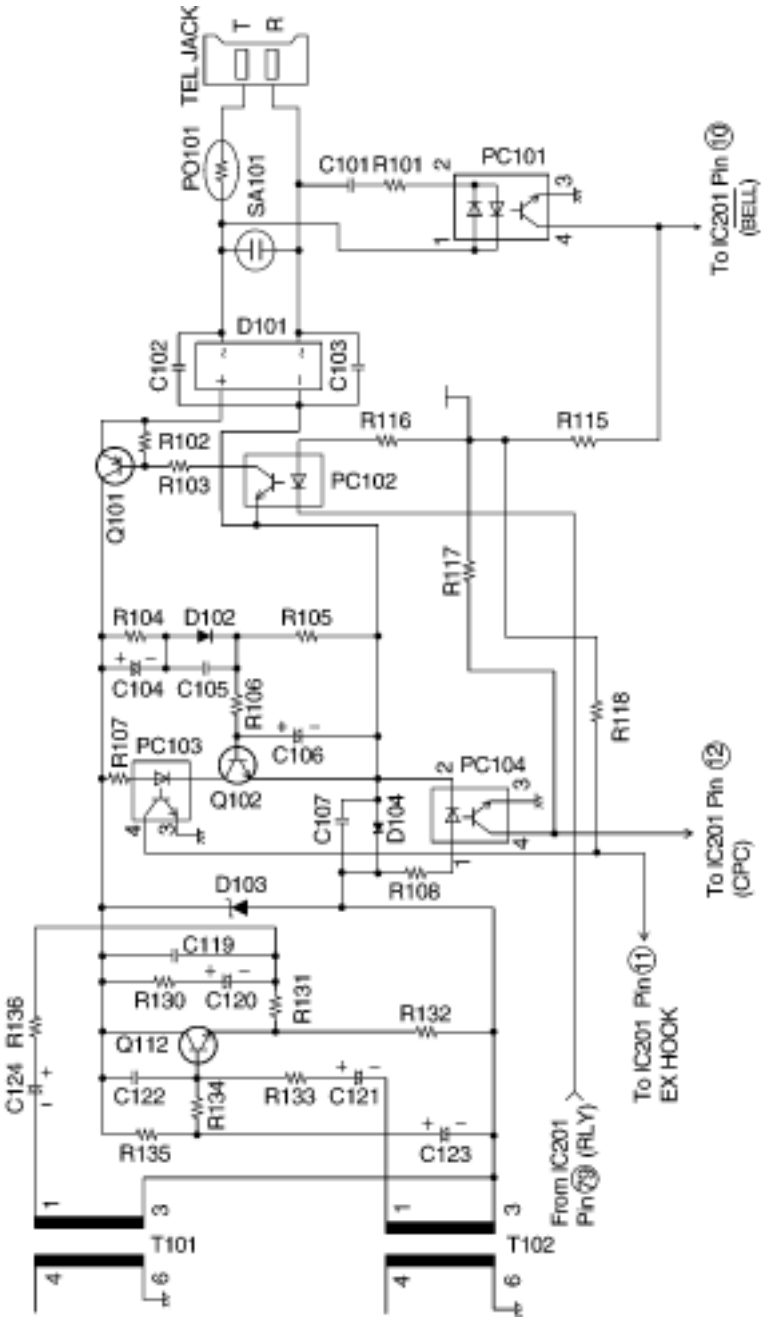
ON HOOK

Q101 is open, Q101 is connected as to cut the DC loop current and to cut the voice signal. The unit is consequently in an on-hook condition.

SPECIFICATIONS

In the on-hook state (idle), the current flows between the telephone line and the unit is as follows:/T→ PO101→ PC101→ R101→ C101→ R/The DC component is blocked by C101: thereby providing anon-hook condition./The AC interface impedance is over 47 kΩ; thus, satisfying the telephone company requirements.

Circuit Diagram



TOP PREVIOUS NEXT

27.5 Intercom Mode

1. When the base unit LOCATOR/INTERCOM button is pressed, a call monitor signal (intercom sound) is output from pin of IC201 becomes "LOW". Thus a monitor tone is heard from the speaker.

2. At the same time, pin 13 of IC201 goes "Low", and the transmission state is reached. Then the modulated data signal is output from pin 17 of IC201. Flashing of the IN USE/CHARGE (LED702) is obtained from pin 13 of IC702. This statusis called "Intercom stand-by".

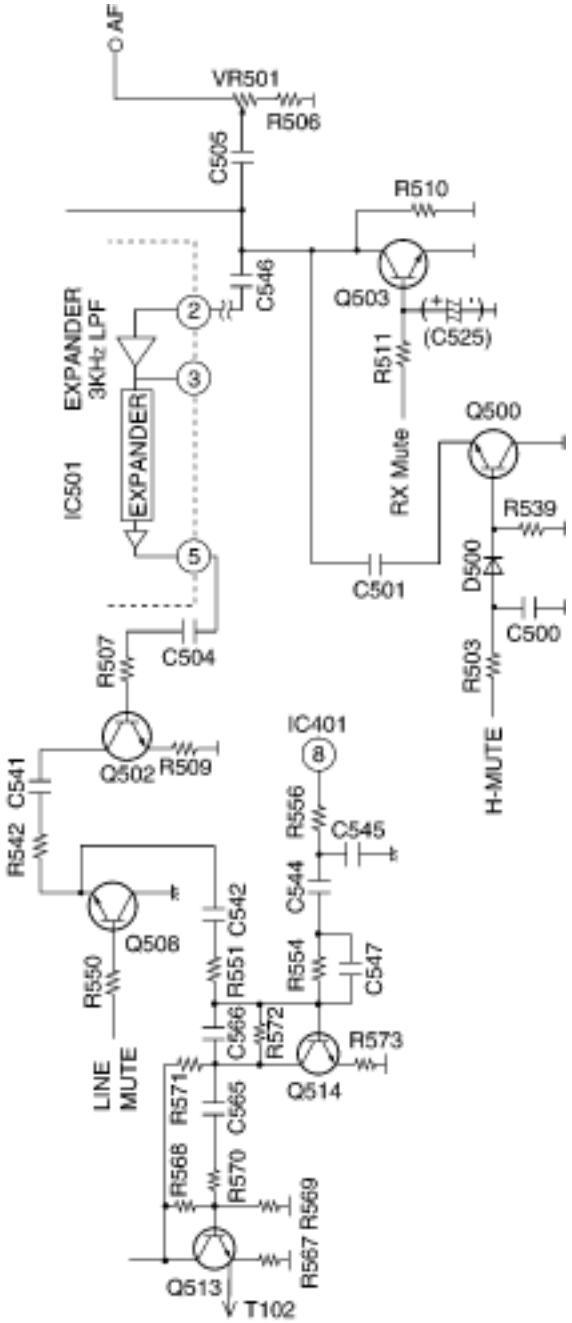
3. The receiving signal flows:/RF→ pin 11 of CN501→ VR501→ Q502→ C504→ R513→ pin 2 of IC501→ pin 5 of IC501→ collector of Q511→ emitter of Q511→ R557→ C558→ baseunit of Q401→ emitter of Q401→ pin 26 of IC401→ pin 29 and 31 of IC401→ Speaker.

4. The transmission signal flows:/MIC→ pin 15 of IC401→ pin 22 of IC401→ C535→ C521→ R523→ pin 21 of IC501→ pin 20 of IC501→ C520→ R521→ R520→ C519→ pin16 of IC501→ pin 13 of IC501→ R519→ pin 11 of IC501→ pin 10 of IC501→ R516→ VR502→ pin 1 of CN501→ RF.

27.6 Line Sending Signal

The AF signal output from the AF terminal of the RF unit is adjusted to the appropriate level by VR501, amplified by Q502, and input to IC501. The RX DATA signal from the portable handset is muted at this point by Q502 to prevent the RX DATA fromleaking onto the line. IC501 comprises a 3 kHz LPF and an expander IC. The signal compressed by the portable handset is expanded, recreating it as a normal signal. The output from the expander passes through amplifier Q514 and buffer amplifier Q513before being input to line transformer T102. In the speakerphone mode, the signal is supplied from pin 4 of IC401 to Q514.

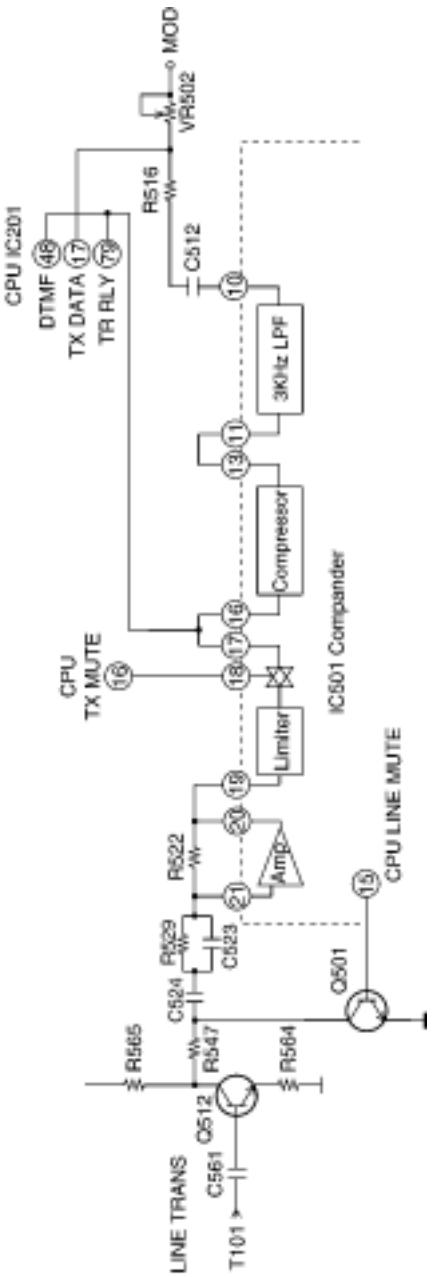
Circuit Diagram



27.7 Line Receiving Signal

The audio signal from line transformer T101 is amplified by Q512 and input to IC501. IC501 comprises an amplifier, limiter, mute circuit, compander, and 3 kHz LPF. It performs signal processing. The audio signal output from pin 10 of IC501 is mixed withthe DTMF, TX DATA, and TR RLY signals. At this point (in the talk mode), the DTMF tones, pulse dial tones, and data transferred between the portable handset and base unit is input to the modulator circuit.

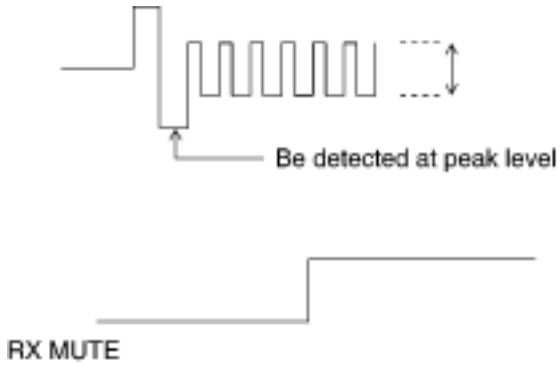
Circuit Diagram



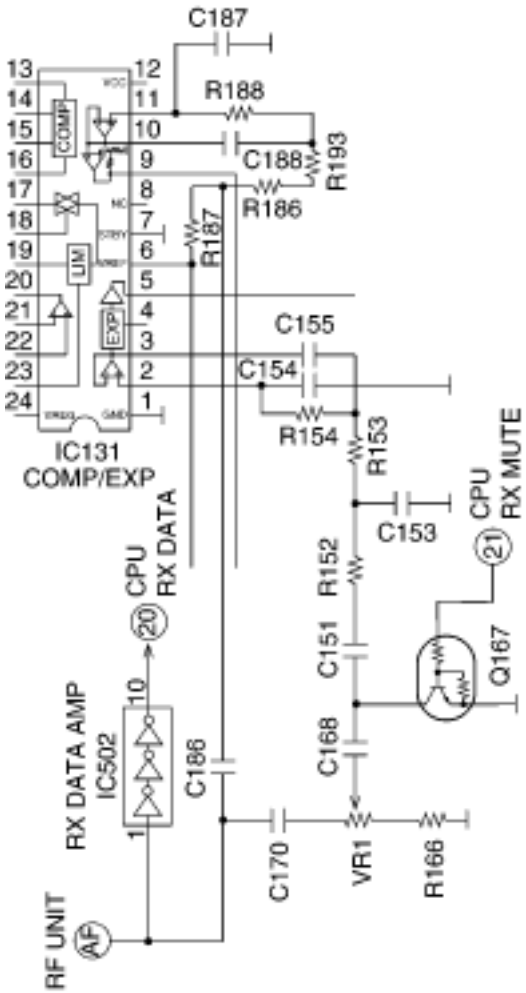
27.8 RX Data Circuit

The resulting demodulated data waveform is then input to RX DATA pin 22 of the CPU.If there is data from the handset during talk operation, the handset data is as shown below to prevent the data from leaking ontothe line.

Timing Chart



Circuit Diagram



27.9 ID Code Setting

TOP PREVIOUS NEXT

When the handset is placed on the base unit, the charge detector operates and ID data is output from pin 20 of the CPU. After passing through data amplifier Q61 and the charge terminal, the data is sent to the handset.

TOP PREVIOUS NEXT

27.10 SP-Phone RX Circuit

TOP PREVIOUS NEXT

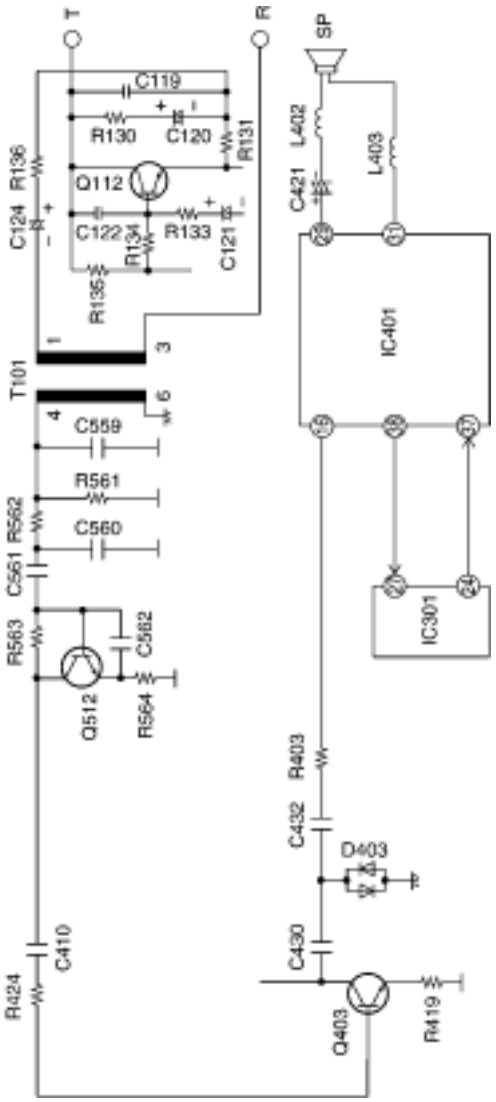
Circuit Operation:

Telephone Line→ R136→ C124→ T101→ R562→ C561→ Q512→ C410→ Q403→ C430→ C432 → R403→ pin 16 of IC401→ pin 38 of IC401→ pin27 of IC301→ pin 24 of IC301→ pin 37 of IC401→ pin 29 and 31 of IC 401

→ C421→ Speaker.

or→ Speaker.

Circuit Diagram



TOP PREVIOUS NEXT

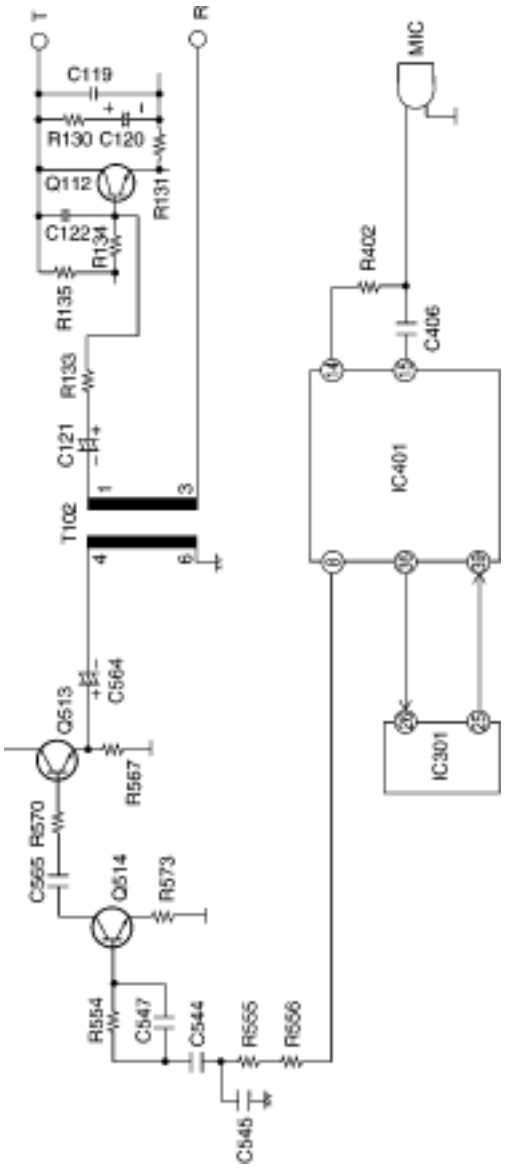
27.11 SP-Phone TX Circuit

TOP PREVIOUS NEXT

Circuit Operation:

MIC→ C406→ pin 15 of IC401→ pin 36 of IC401→ pin 26 of IC301→ pin 25 of IC301→ pin 39 of IC401→ pin 8 of IC401→ R556→ R555→ C544→ R554→ BaseUnit of Q514→ Collector of Q514 → C565→ R570→ Base Unit of Q513→ Emiter of Q513→ C564→ T102→ C121→ R133→ Q112 → Telephone Line

Circuit Diagram



TOP PREVIOUS NEXT

27.12 DSP (Digital Speech/Signal Processing) Circuit

TOP PREVIOUS NEXT

General Description:

(IC301, IC302 and IC401) is a digital speakerphone//speech/signal processing system that implements all the functions of speech compression, record and playback, and memory management required in a digital telephone answering machine.

The DSP system is fully controlled by a host processor (IC201), via 8 bit interface. The host processor provides activation and control of all that functions, such as speech Recording, Playback, Tone detecting and Line Monitoring.

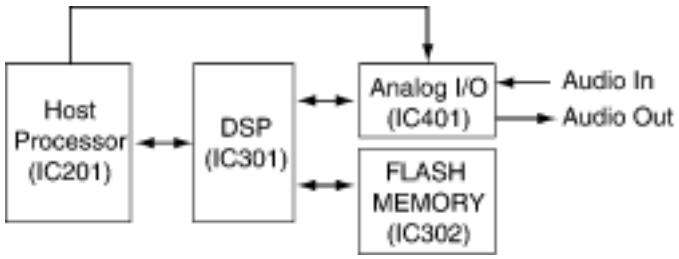
The DSP system comprises of following.

a Digital Signal Processor which includes the firmware implemented functions.

a Codec (IC401), which is used as the analog I/O interface.

a FLASH MEMORY (IC302), which is used for stored voice messages and synthesized voice.

Circuit Diagram



Voice Message Recording

The DSP system use a proprietary speech compression technique to record and store voice message in FLASH MEMORY (IC302).

An error correction algorithm is used to enable playback of these messages from the FLASH MEMORY (IC302).

DTMF Detection

The DTMF detection is implemented by the DSP system in software. The DTMF detection is performed during Record, Playback, and Line Monitoring modes of operation.

Synthesized Voice

The DSP implements synthesized Voice, utilizing the built in speech detector and an FLASH MEMORY (IC302), which stored the vocabulary.

VOX Detection

The VOX detection is implemented by the DSP system in software.

The VOX detection is performed during ICM Record mode of operation.

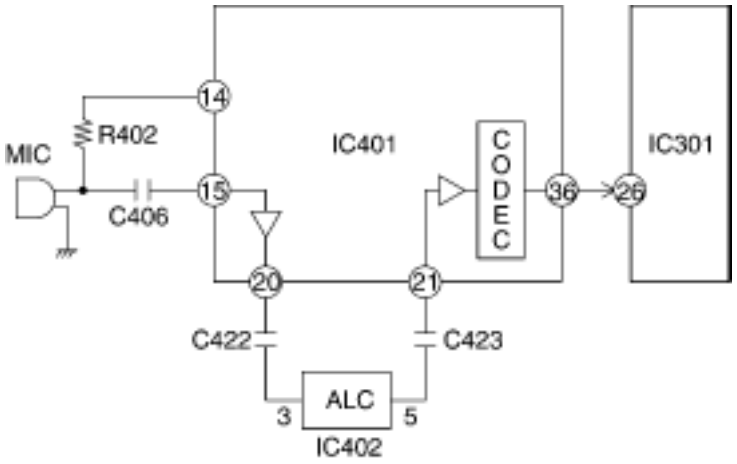
TOP PREVIOUS NEXT

27.13 Greeting Recording Circuit

Circuit Operation:

MIC→ C406→ pin 15 of IC401→ pin 20 of IC401→ pin 3 of IC402→ pin 5 of IC402→ pin 21 of IC401→ pin 36 of IC301→ pin 26 of IC301.

Circuit Diagram



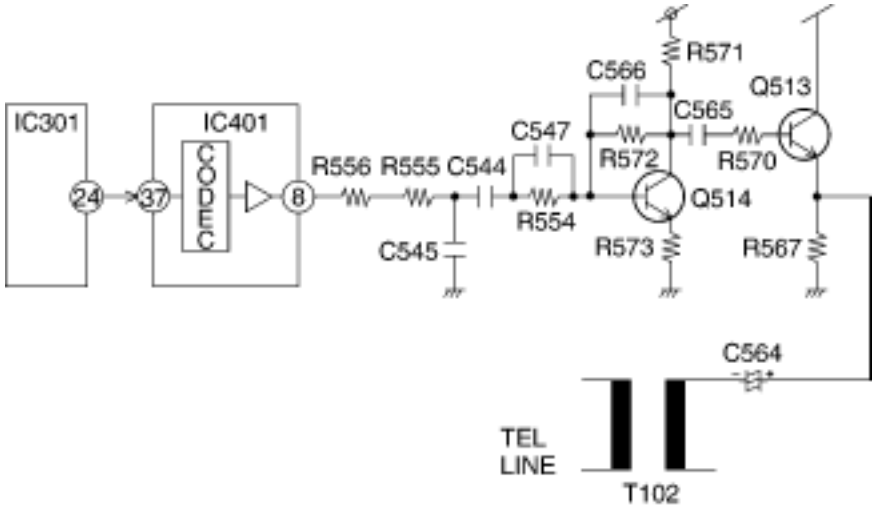
27.14 Greeting Play Back Circuit

TOP PREVIOUS NEXT

Circuit Operation:

Pin 24 of IC301→ pin 37 of IC401→ pin 8 of IC401→ R556→ R555→ C544→ R554→ base unit of Q514→ collector of Q514→ C565→ R570→ base unit ofQ513→ emitter of Q513→ C564→ T102→ TEL LINE.

Circuit Diagram



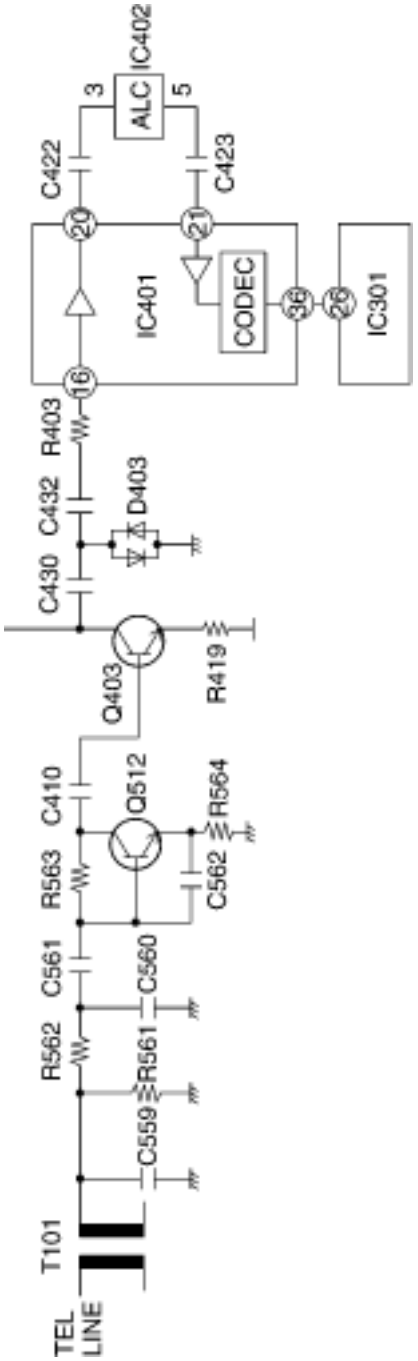
TOP PREVIOUS NEXT

27.15 ICM Recording Circuit

Circuit Operation:

TEL LINE→ T101→ R562→ C561→ Collector of Q512→ C410→ R403→ pin 16 of IC401→ pin 20 of IC401→ C422→ pin 3 of IC402→ pin 5 of IC402→ C423→ pin21 of IC401→ pin 36 of IC401 → pin 26 of IC301.

Circuit Diagram



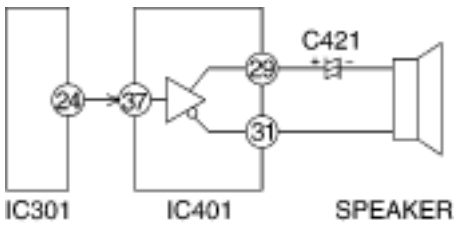
27.16 ICM Play Circuit

TOP PREVIOUS NEXT

Circuit Operation:

Pin 24 of IC301→ pin 37 of IC401→ pin 29 and 31 of IC401→ C421→ Speaker.

Circuit Diagram



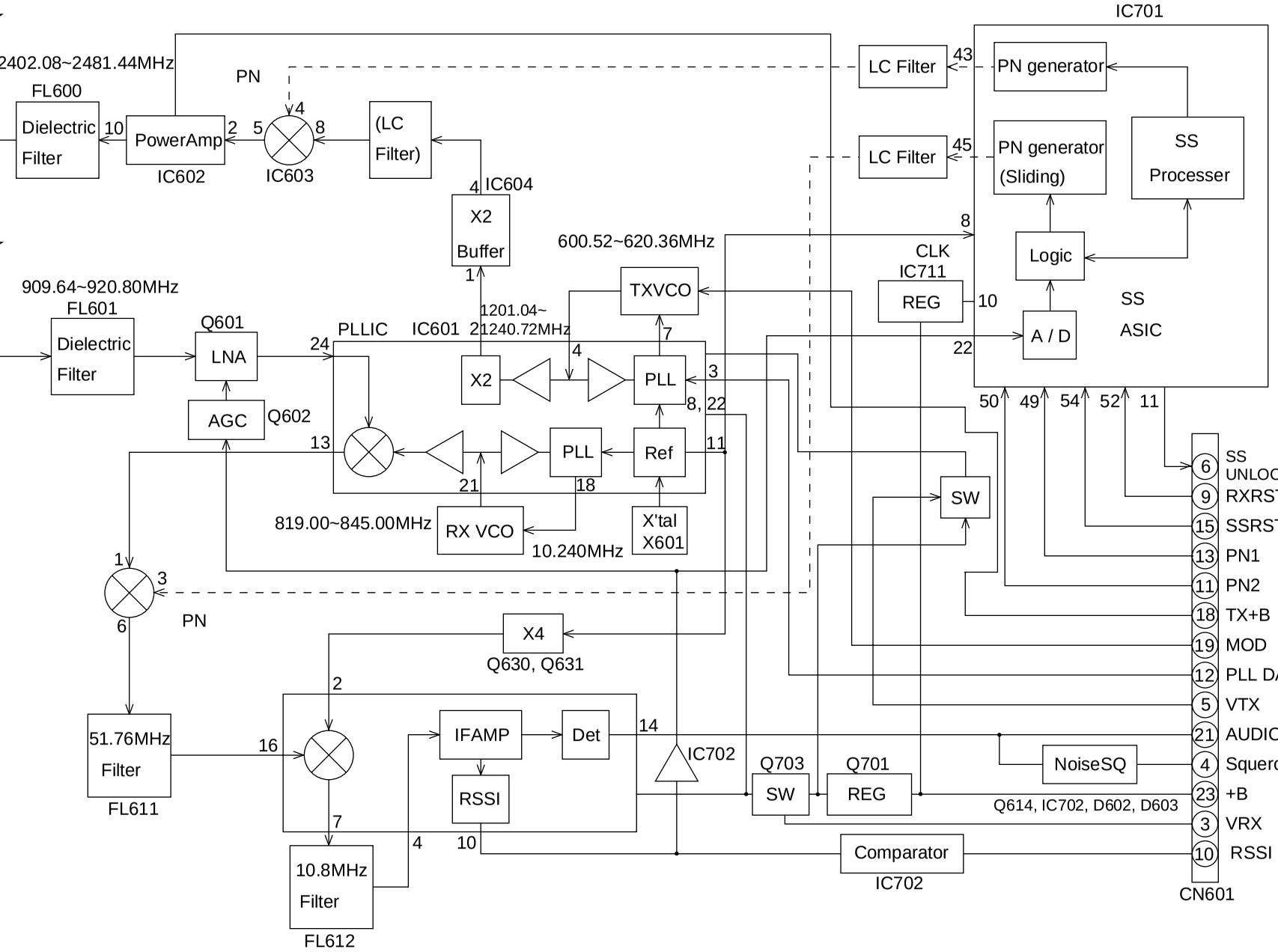
TOP PREVIOUS NEXT

28 BLOCK DIAGRAM (Base Unit-RF Unit)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

28.1 RF P.C.Board

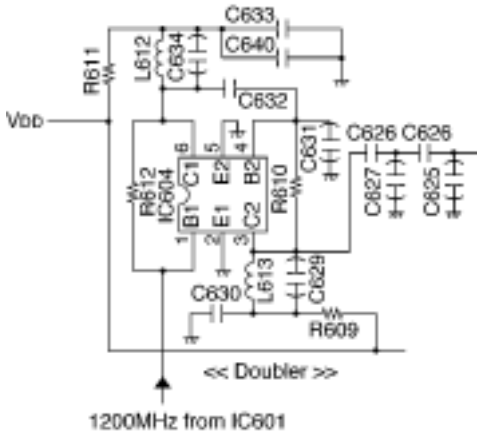

IC701
2402.08~2481.44MHz
PN
FL600
Dielectric Filter
10
PowerAmp
2
5
4
8
IC602
IC603
(LC Filter)
LC Filter
43
PN generator
LC Filter
45
PN generator (Sliding)
SS Processer
4 IC604
X2 Buffer
1
600.52~620.36MHz
8
CLK
IC711
REG
10
Logic
SS
ASIC
A / D
22
909.64~920.80MHz
FL601
Dielectric Filter
Q601
LNA
24
PLLIC
IC601
21
1201.04~1240.72MHz
TXVCO
7
4
X2
PLL
3
8, 22
AGC
Q602
13
PLL
Ref
11
21
18
819.00~845.00MHz
RX VCO
10.240MHz
X'tal X601
50
49
54
52
11
SW
1
3
6
PN
X4
Q630, Q631
2
51.76MHz Filter
FL611
16
IFAMP
Det
14
IC702
RSSI
Q703
SW
Q701
REG
NoiseSQ
Q614, IC702, D602, D603
7
4
10
10.8MHz Filter
FL612
Comparator
IC702
CN601
6 SS UNLOC
9 RXRST
15 SSRST
13 PN1
11 PN2
18 TX+B
19 MOD
12 PLL DA
5 VTX
21 AUDIC
4 Squelc
23 +B
3 VRX
10 RSSI

29 RF UNIT CIRCUIT OPERATION (Base Unit-RF Unit)

29.1 TX Doubler

The signal of 1200MHz is input from Pin 2 of IC 601 to Pin 1 of IC604. IC604 makes this signal to 2400MHz, then outputs it from Pin 4 of IC604.

Circuit Diagram



29.2 Spreader

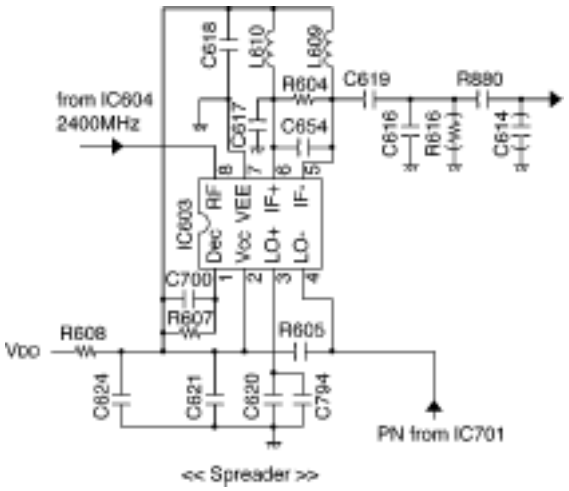
TOP PREVIOUS NEXT

PN code* from Pin 43 of IC701 is input to Pin 4 of IC603, causing the input signal to Pin 8 of IC603 to spread. The spread signal is output from Pin 5 of IC603.

PN code* (Pseud Noise):

A didital data that is multiplied to extend a spectrum for a signal modulated by base band signal (FM).

Circuit Diagram



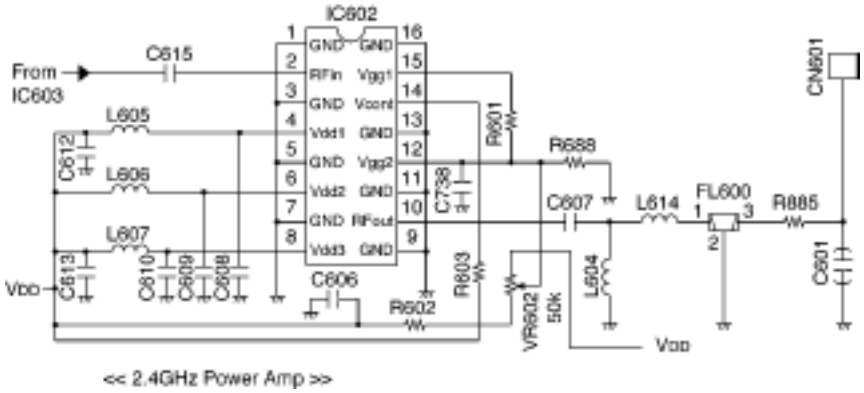
<< Spreader >>

TOP PREVIOUS NEXT

29.3 Power Amplifier

The spread signal output from Pin 5 of IC603 is input to Pin 2 of IC602. IC603 increases the level approximately 20dB, then it is output from Pin 10 to control the gain of IC602 at VR602,and radiated through FL600 (2400MHz BPF).

Circuit Diagram

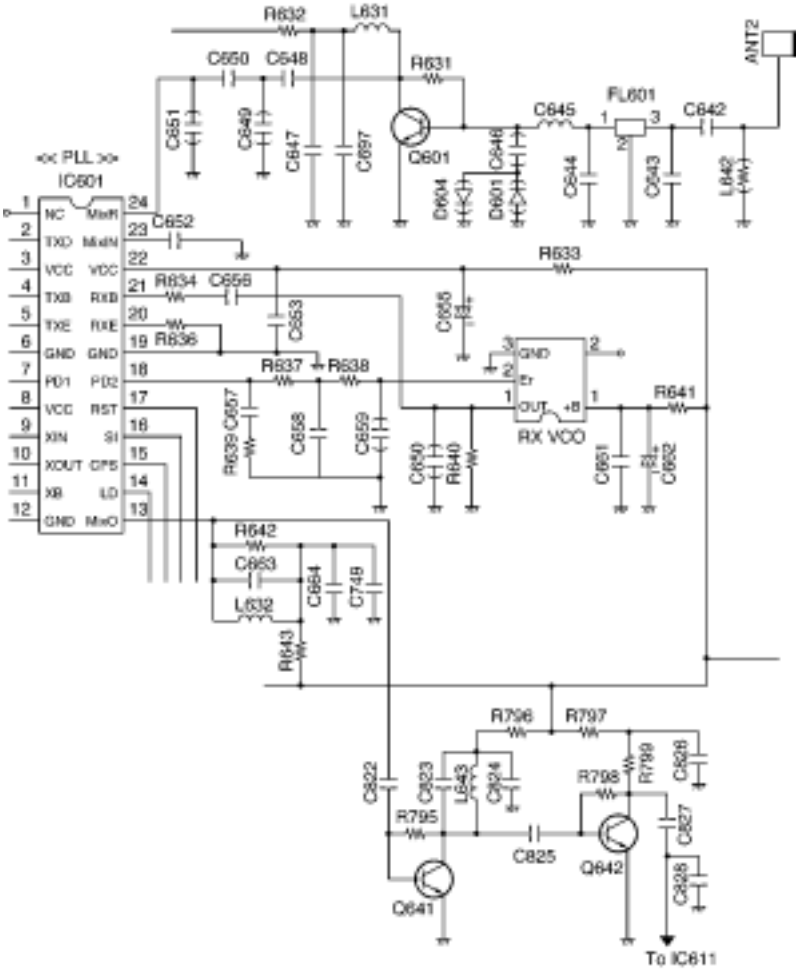


<< 2.4GHz Power Amp >>

29.4 RF Amp. 1st Mixer

The receiving signal (spread signal) input from antenna (ANT2) is passed through FL601 and amplified at Q601, then led to Pin 24 of IC601. The signals from Pin 24 and Pin 21 of IC601 generate the 1st IF signal of 51.76MHz, then it is outputfrom Pin 13. The level of the 1st IF signal is limited at Q641 and Q642, and led to IC611.

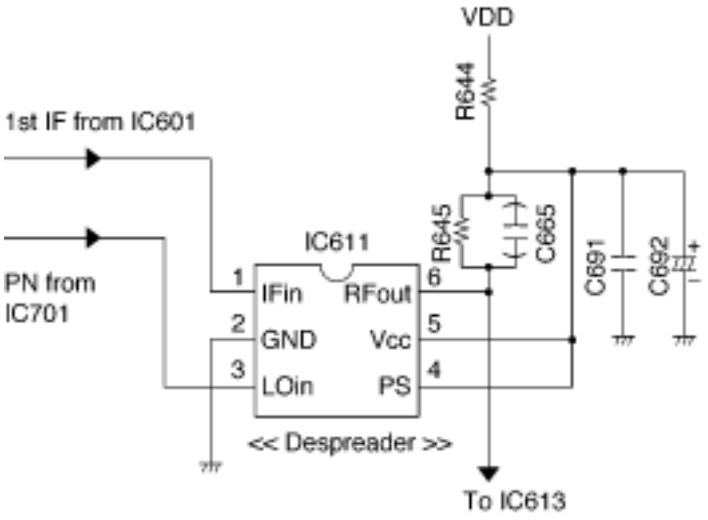
Circuit Diagram



29.5 Despreader

The 1st IF signal (spread signal) of 51.76MHz is input to Pin 1. PN code output from Pin 45 of IC701 is input to Pin 3 of IC611. This PN code despreads, and the 1st IF signal (FM signal) is output from Pin 6.

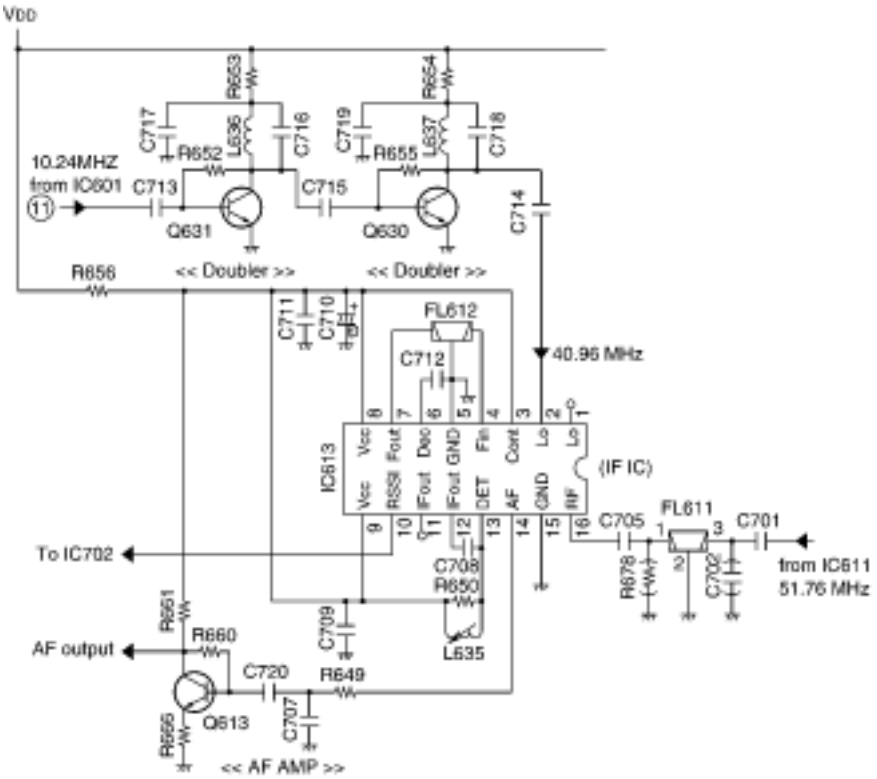
Circuit Diagram



29.6 FM Demodulation

The receiving signal, FM signal which is despread at IC611, is input to Pin 16 of IC613. The signal of 10.24MHz output from Pin 11 of IC601 is increased by 4 times to become the 2nd local signal of 40.96MHz, and input to Pin 2 of IC613. IC613 makesthe 2nd local signal of 10.8MHz from the input signals of Pin 2 and Pin 16, and outputs it from Pin 7. Then the FM demodulated signal, voice signal is output from Pin 14.

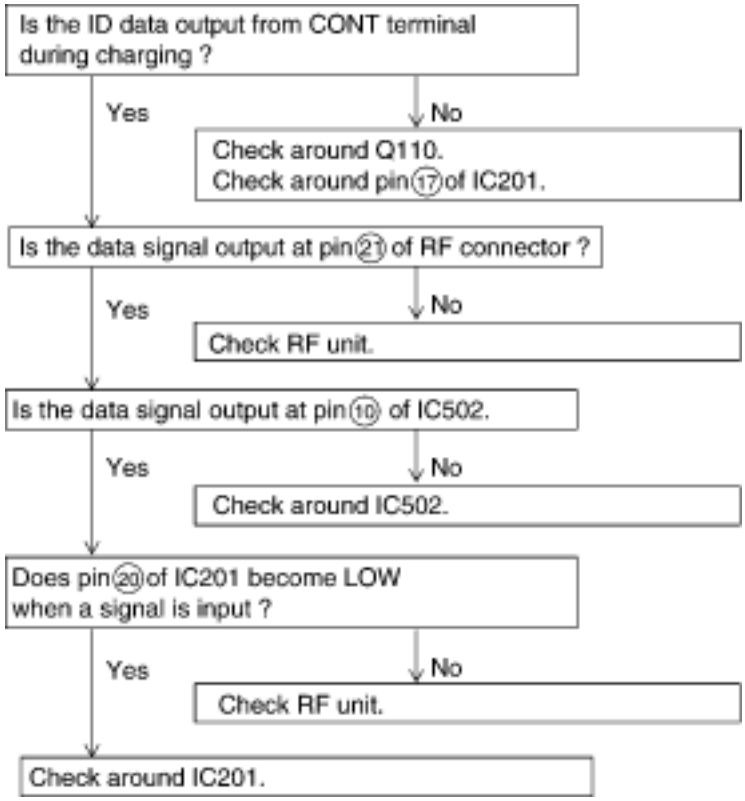
Circuit Diagram



29.7 RSSI (Receiving Signal Strength)

IC613 detects the 2nd IF signal (10.8MHz), and converts the receiving signal level to DC voltage, then outputs from Pin 10. This level modulation of RSSI indicates a level modulation of reception signal. In this system, this modulation takes aperiodic of SS (PN), and returns extended signal by PN to original signal that is not extended. Output (Pin 10)of RSSI is connected to CPU, IC702 and Q602. CPU predicts the distance between handset and base by this level change and changes transmissionoutput. IC702 takes the periodic of SS (PN) that is referred above. Q602 controls Gain of Reception Amp between handset and base unit.

Circuit Diagram

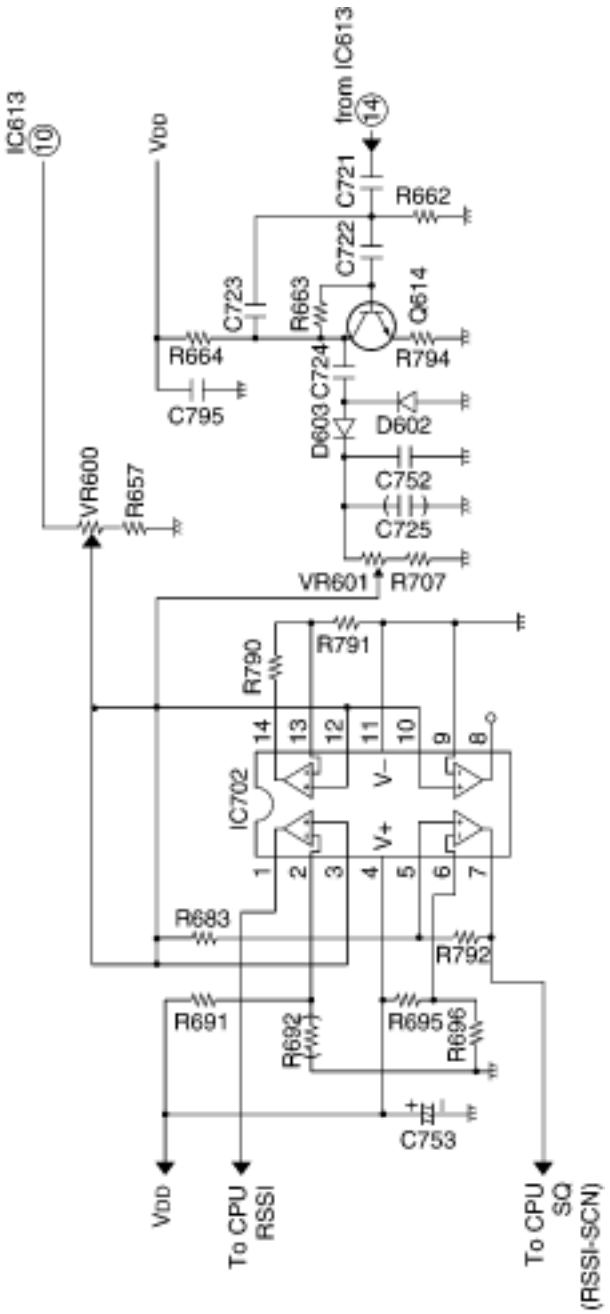


29.8 SQL

The noise filter consisting of Q614 detects the noise level when the level of receiving signal is low (weak electric field), and compares with the reference level of IC702, then informs CPU the result.

Pin 7 of IC702 becomes "H" in the weak electric field, and "L" when a signal is received.

Circuit Diagram

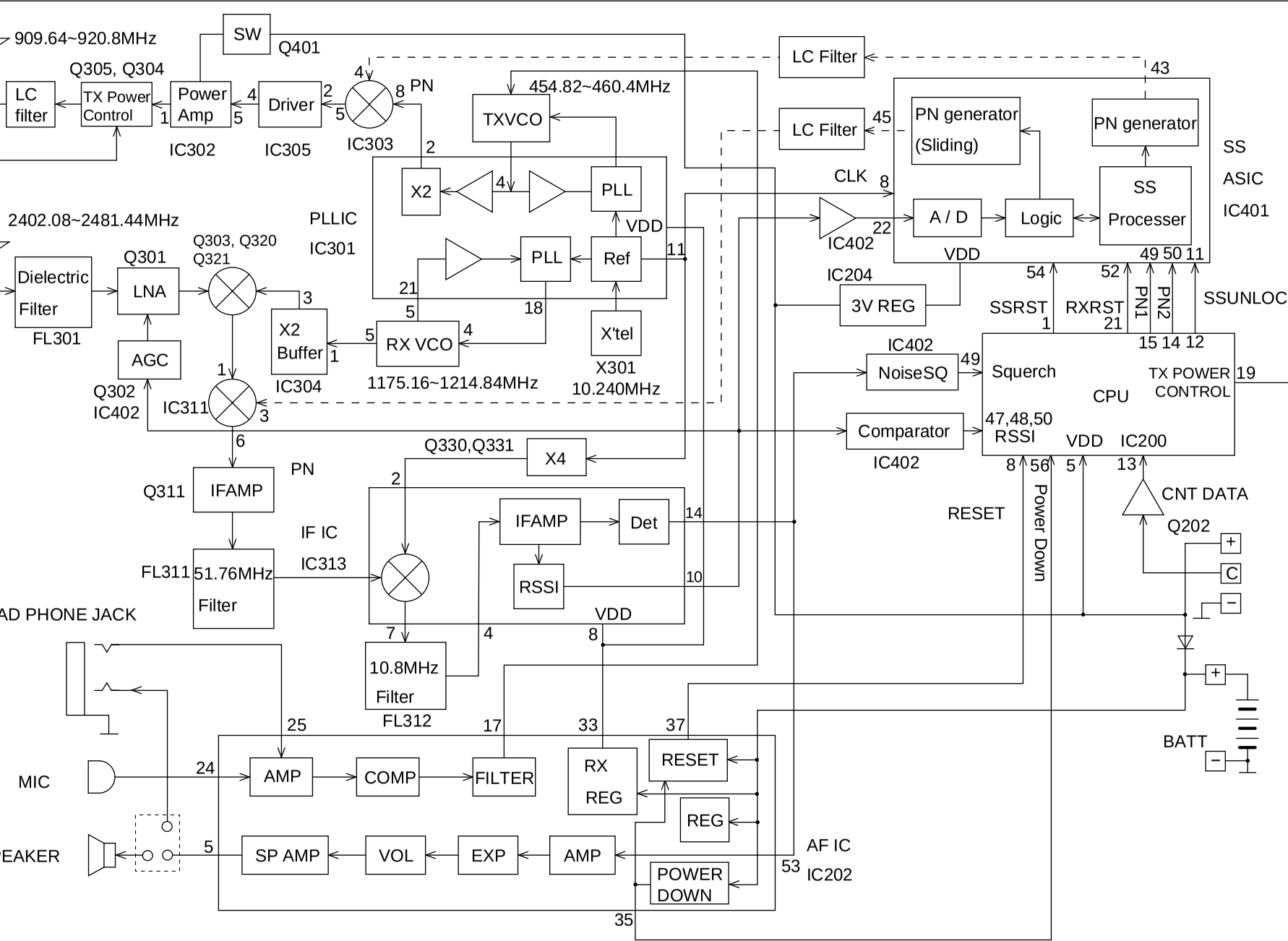


30 BLOCK DIAGRAM (Handset)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

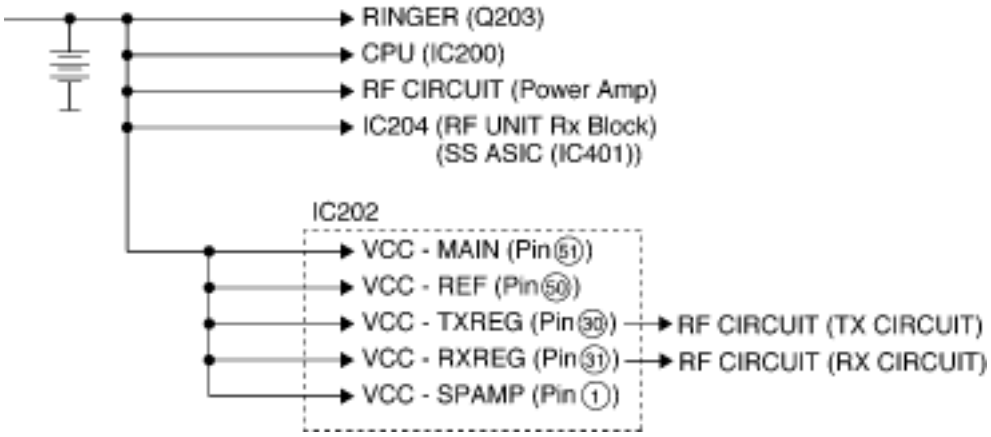
30.1 Control Block


909.64~920.8MHz
SW
Q401
Q305, Q304
LC filter
TX Power Control
Power Amp
Driver
IC302
IC305
IC303
PN
454.82~460.4MHz
TXVCO
LC Filter
43
45
PN generator (Sliding)
PN generator
SS ASIC IC401
SS Processer
CLK
8
2402.08~2481.44MHz
PLLIC IC301
X2
PLL
VDD
Ref
11
A / D
Logic
22
IC402
Q303, Q320 Q321
Q301
Dielectric Filter
FL301
LNA
AGC
Q302 IC402
X2 Buffer
IC304
RX VCO
1175.16~1214.84MHz
X'tel
X301 10.240MHz
21
18
IC204
3V REG
VDD
54
52
49 50 11
SSRST
RXRST
PN1
PN2
SSUNLOC
1
21
15 14 12
IC402
NoiseSQ
49
Squerch
CPU
TX POWER CONTROL
19
Comparator
IC402
47,48,50
RSSI
VDD
IC200
8
56
5
13
Q330,Q331
X4
PN
Q311
IFAMP
IF IC IC313
FL311
51.76MHz Filter
IFAMP
Det
14
RSSI
10
VDD
RESET
Power Down
CNT DATA
Q202
+
C
−
AD PHONE JACK
7
4
8
10.8MHz Filter
FL312
25
17
33
37
BATT
MIC
24
AMP
COMP
FILTER
RX REG
RESET
REG
SPEAKER
5
SP AMP
VOL
EXP
AMP
AF IC IC202
53
POWER DOWN
35

31.1 Power Supply Circuit

As indicated in Fig.7, voltage is supplied separately to each block.

Circuit Diagram

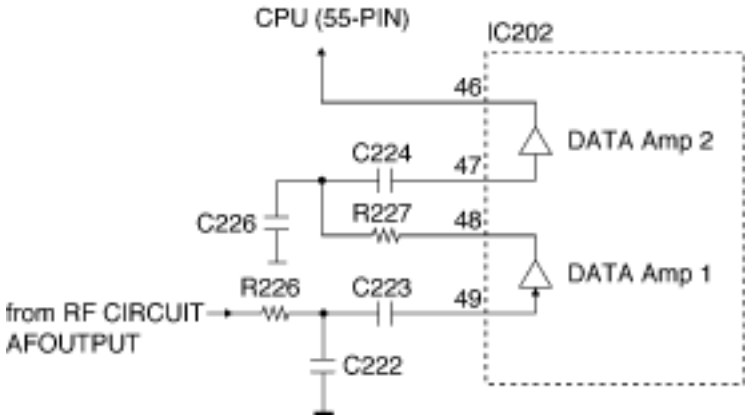


31.2 Data Reception Circuit

TOP PREVIOUS NEXT

The wave detection signal from the RF UNIT has high frequency elements eliminated by a CR filter consisting of R226 and C222. Then it is amplified by DATA Amp1 and, once again, high frequency elements are eliminated by R227 and C226. After this,the signal is amplified by DATA Amp2 and input to pin 55 of the CPU.The data output waveform is a block pulse.

Circuit Diagram

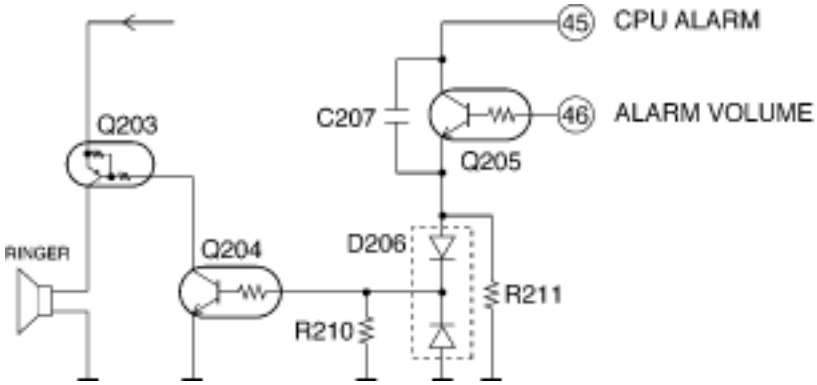


TOP PREVIOUS NEXT

31.3 Ringer Circuit

If the ringer volume is set to low and the key is entered occurs, an alarm tone is output from pin 45 of the CPU and input to Q205 and C207. Then Q205 is turned off. The ringer sound is decreased depending on the time constant of C207 and R211. Ifthe ringer volume is set to high, Q205 turns on and results in a louder beep tone.

Circuit Diagram



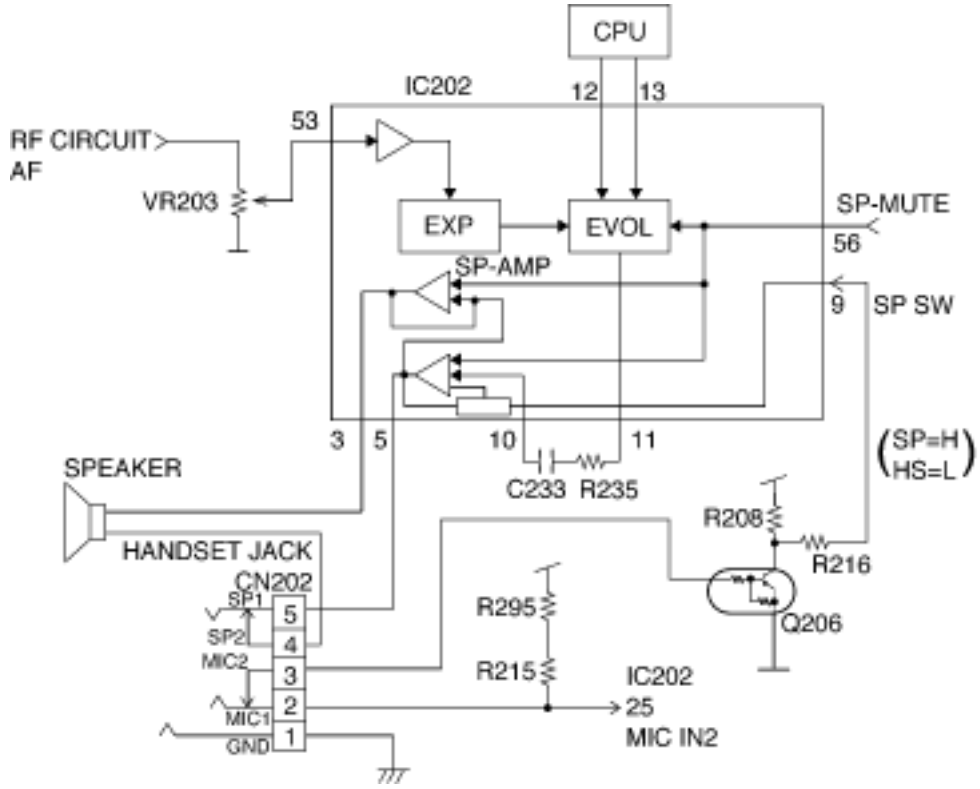
31.4 Reception Signal Circuit

The receiver circuit comprises expander IC202. After being adjusted to the appropriate level by VR203, the signal passes through a 3 kHz LPF and an expander built into IC202. When the user talks more softly, the received audio signal is audible atthe standard level.

RX VOL	EV1 ⑫ pin	EV2 ⑬ pin
+7dB	H	L
0dB	L	H
–7dB	L	L

SP MUTE H : SPEAKER OFF
L : SPEAKER ON

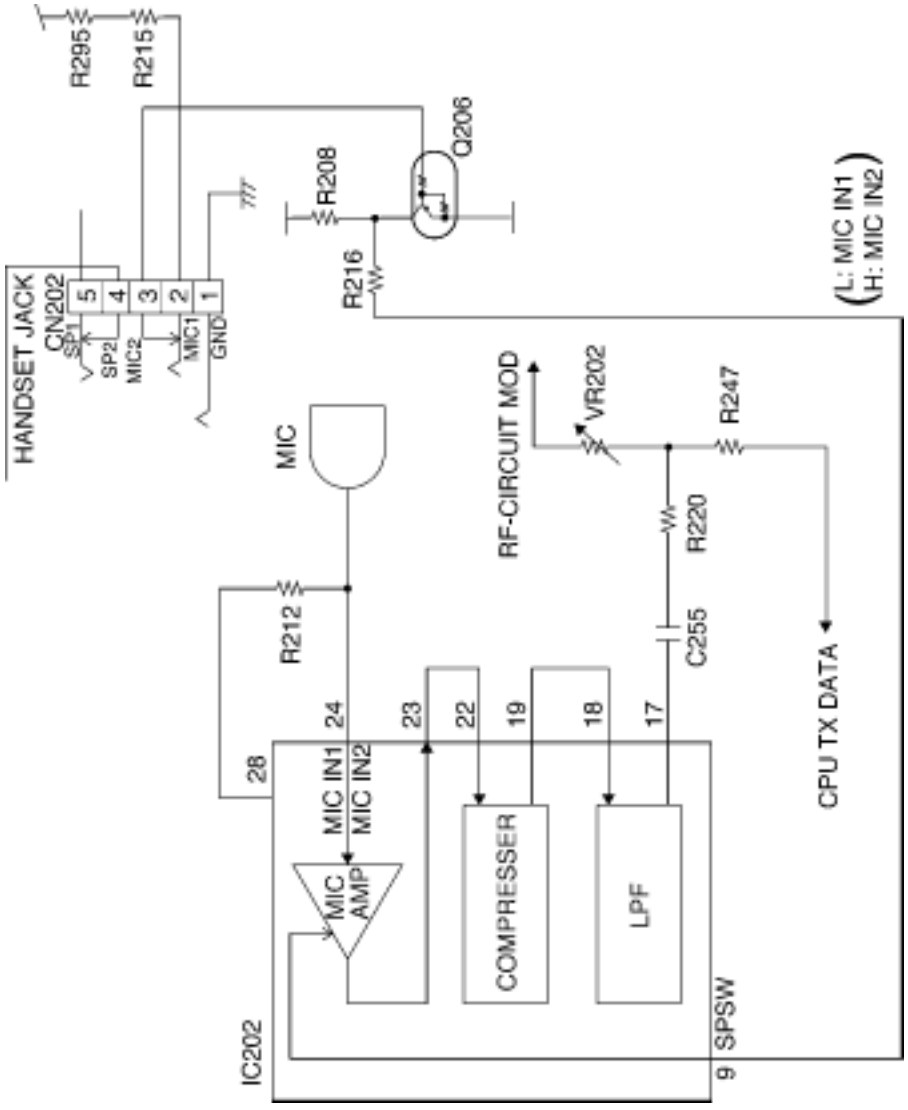
Circuit Diagram



31.5 Sending Signal

The audio signal from the microphone is amplified by Mic Amp, compander, and 3 kHz LPF built into IC202. It is then mixed with the TX DATA signal from the CPU, the modulation is adjusted by VR202, and input to the modulator in the RF Circuit.

Circuit Diagram



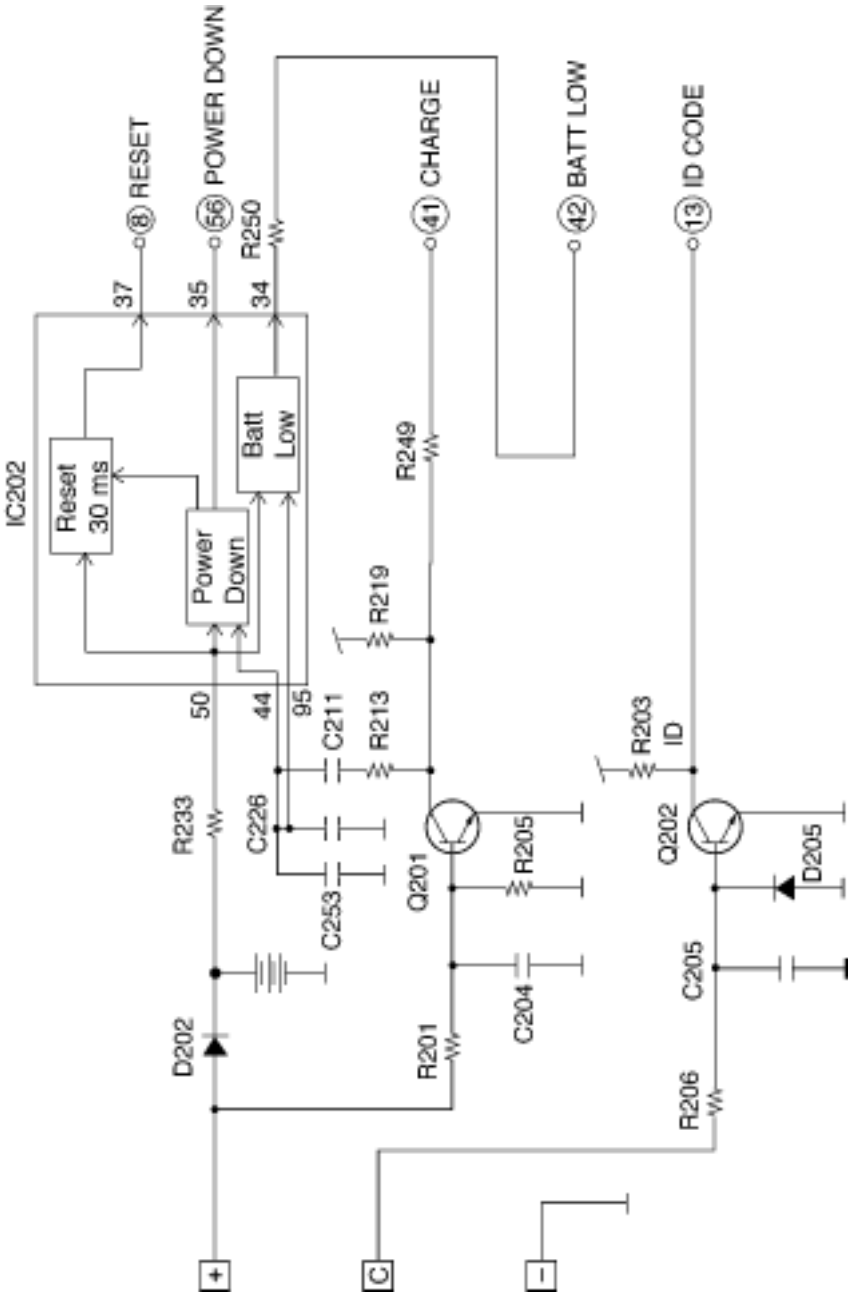
31.6 Headset Circuit

After setting headset into headset jack (CN202), 3 pin of CN202 becomes OPEN and Q206 becomes OFF, input of 9 pin of IC202 becomes L→ H. Therefore switch inside IC202 changes, a signal that input from headset mic to pin 25 of IC202 passesthrough mic amp of IC202, is inputted to modulator of RF Circuit as signal from handset mic.On the other hand, received audio signal is outputted from headset speaker. At this time, pin 4 of CN202 becomes OPEN, speaker route of handset is cut off,and Amp of IC202 chages to output gain setting for headset.

31.7 Reset/Power Down/Battery Low/ID

When the battery is installed in the handset, the reset circuit consisting of R213, C211, and inside IC202 functions, inputting a reset signal to the CPU. This ensures that the unit will operate normally without the user's needing to switch thepower off and on. When the voltage from the batteries drops to 3.5 V, 3.5 V voltage detector inside IC202 operates and inputs a battery low signal to the CPU. This causes the Recharge LED to turn on. If voltage continues to drop and reaches 3.2 V,3.2 V voltage detector inside IC202 operates and outputs a power down signal to the CPU. This causes power to be cut off automatically and prevents the battery from over discharging. Q201 is a charge detector that informs the CPU whether or not thehandset is currently being charged. During charging, ID data is sent from the base unit. Q202 receives this ID data and sends it to the CPU.

Circuit Diagram

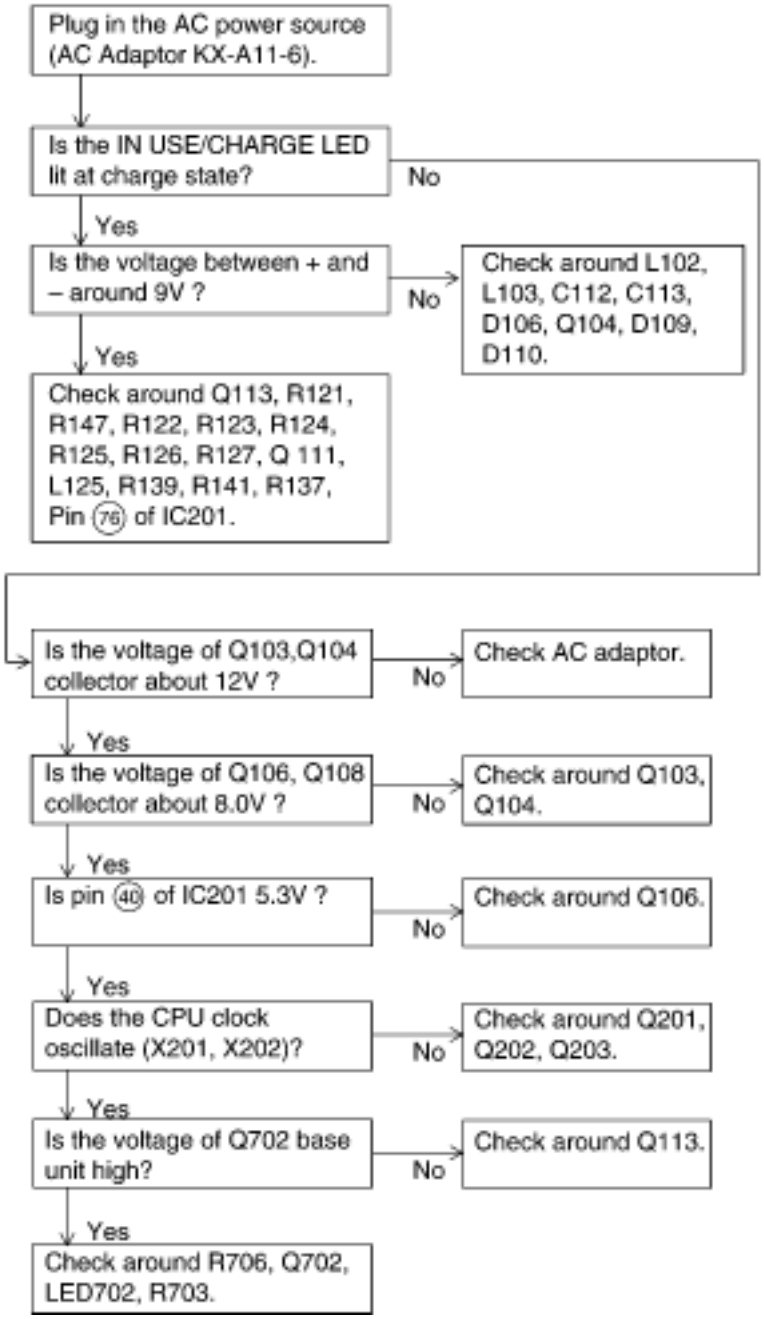


32 TROUBLESHOOTING GUIDE

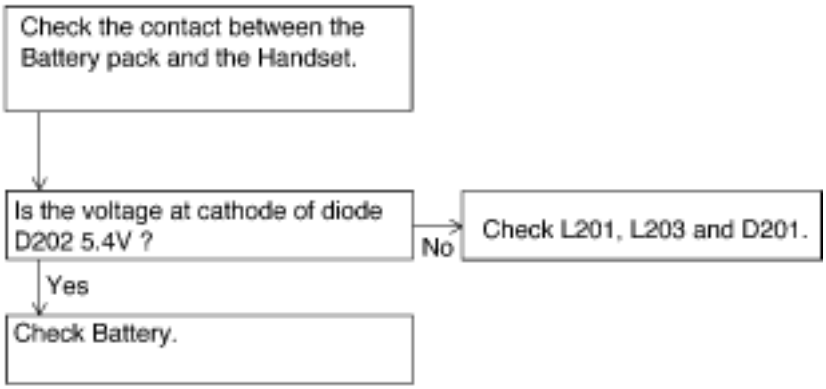
TOP PREVIOUS NEXT

TOP PREVIOUS NEXT

32.1 Battery won't Charge (Base Unit)

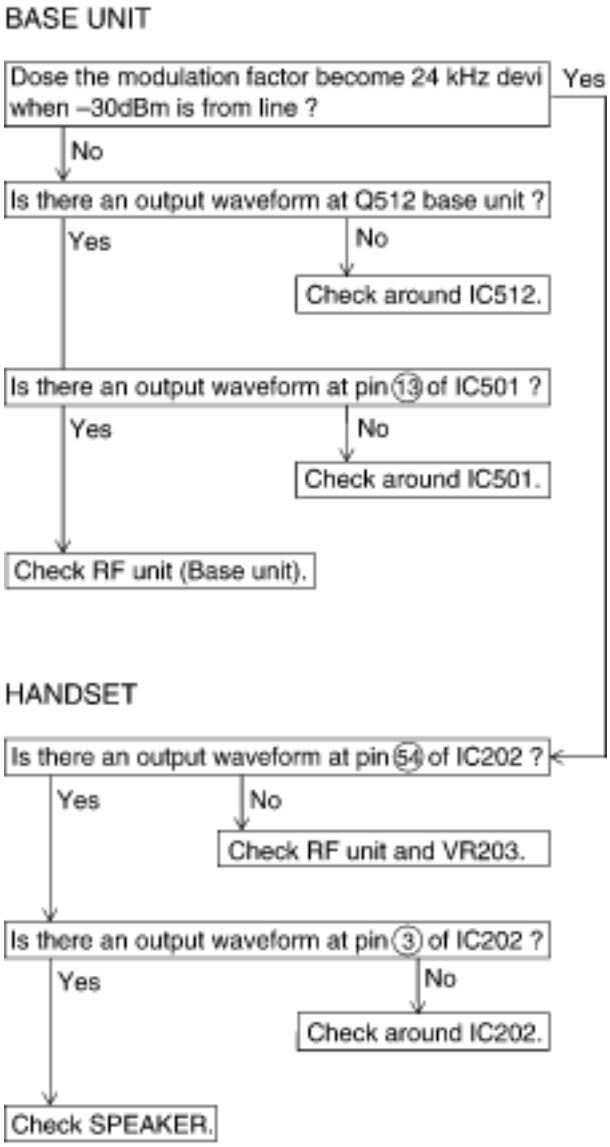


32.2 Battery won't Charge (Handset)



32.3 No Voice Reception

TOP PREVIOUS NEXT

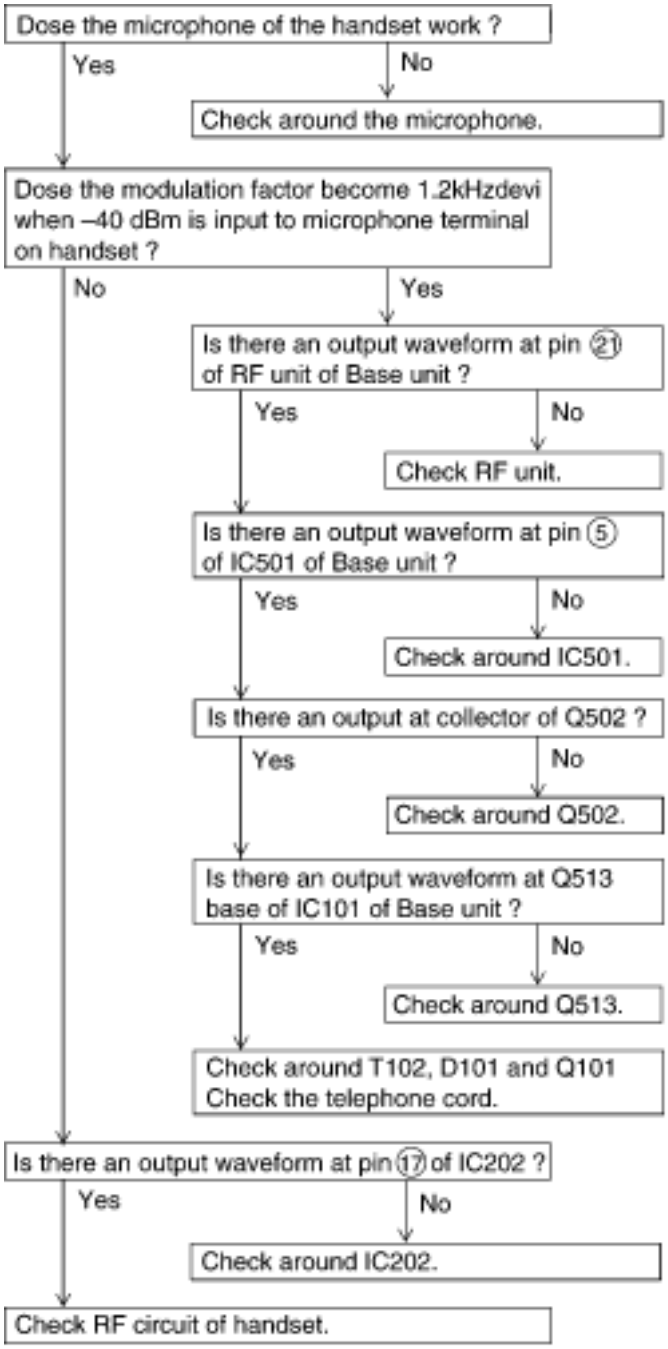


Note:

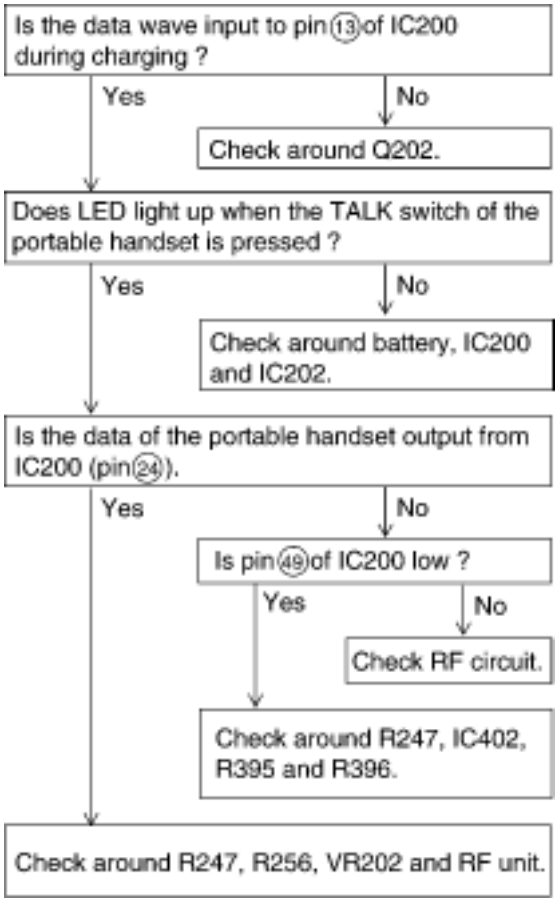
When checking the RF UNIT, refer to chap.15[HOW TO CHECK THE RF UNIT (Handset)].

TOP PREVIOUS NEXT

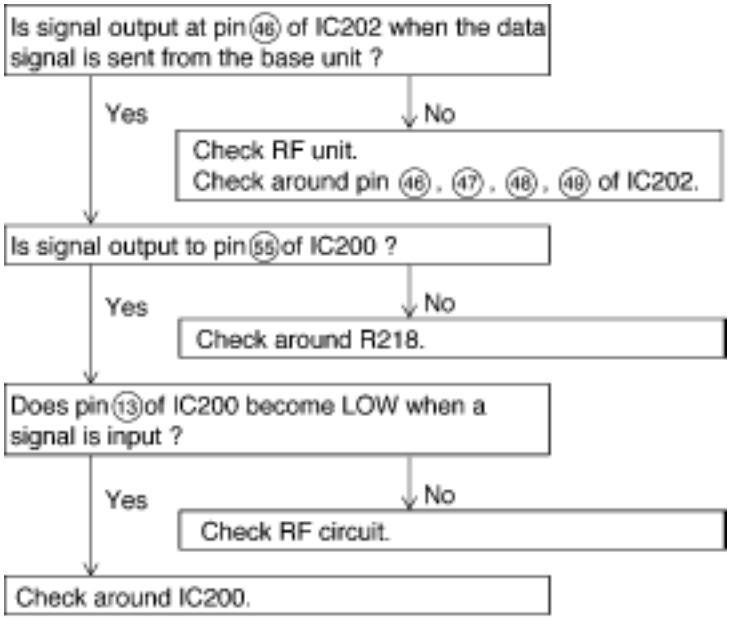
32.4 No Voice Transmission



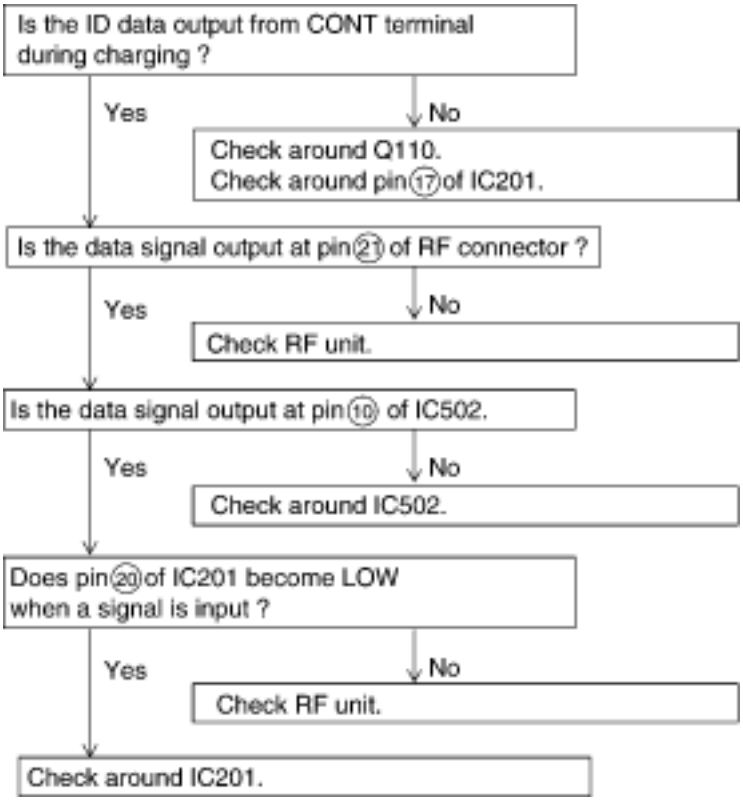
32.5 No Link (Handset TX)



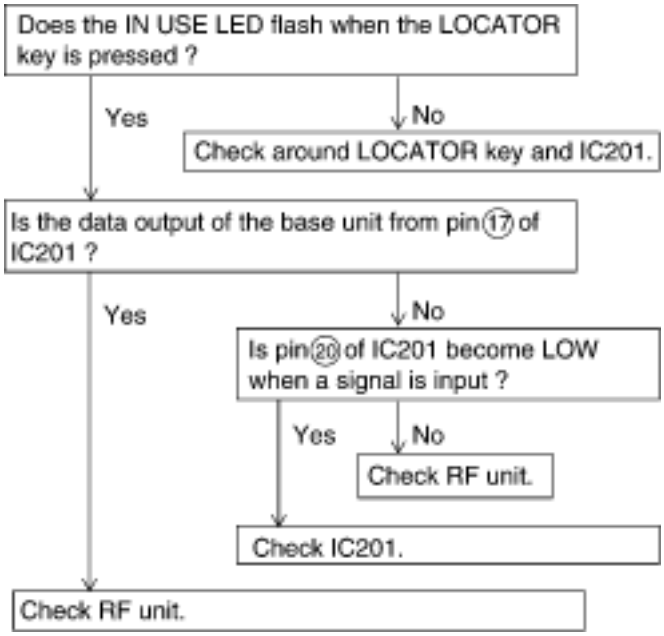
32.6 No Link (Handset RX)



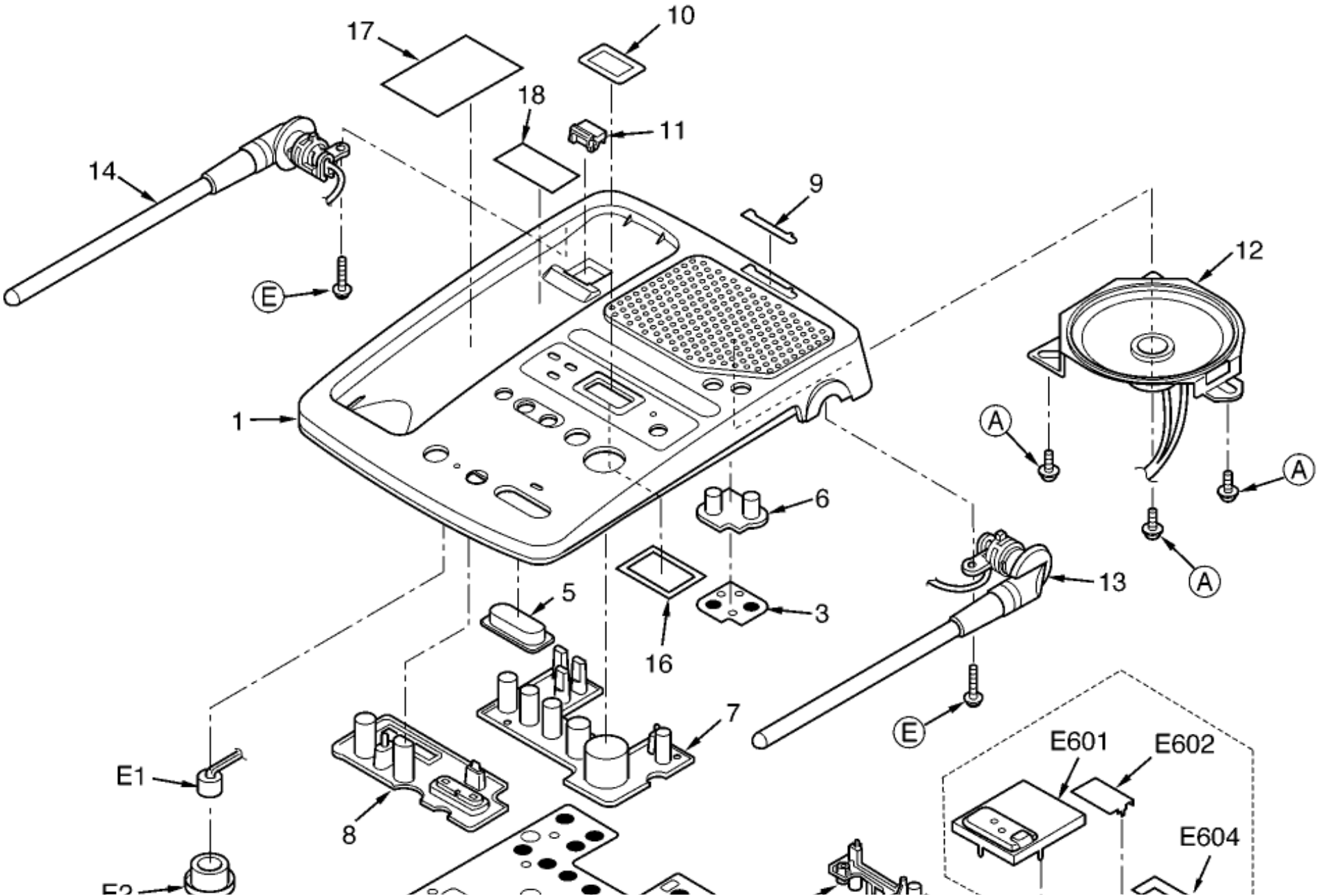
32.7 No Link (Base Unit RX)

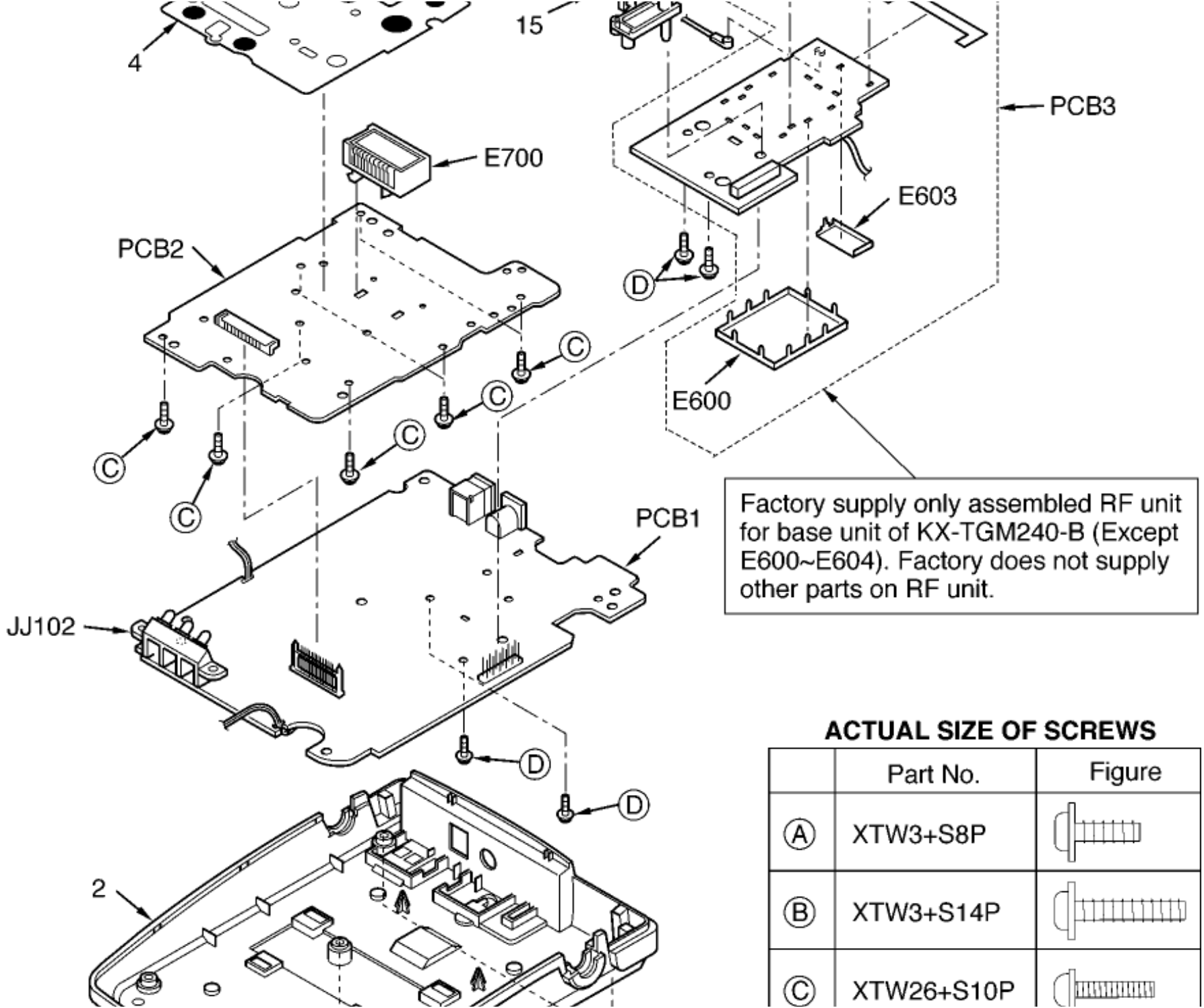


32.8 No Link (Base Unit TX)



33 CABINET AND ELECTRICAL PARTS (Base Unit)

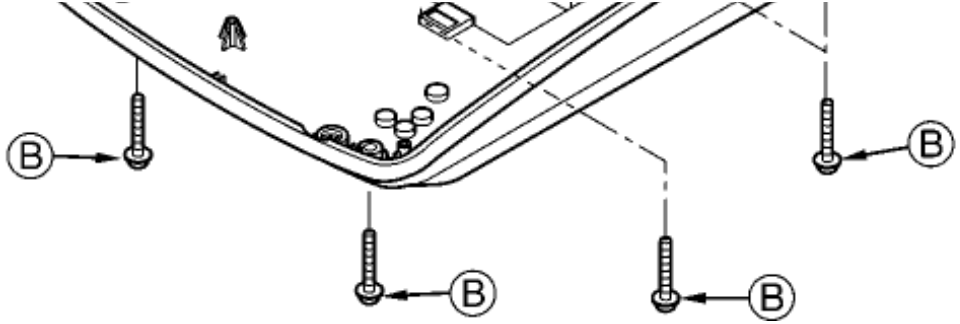


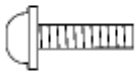


Factory supply only assembled RF unit for base unit of KX-TGM240-B (Except E600~E604). Factory does not supply other parts on RF unit.

ACTUAL SIZE OF SCREWS

	Part No.	Figure
Ⓐ	XTW3+S8P	
Ⓑ	XTW3+S14P	
Ⓒ	XTW26+S10P	

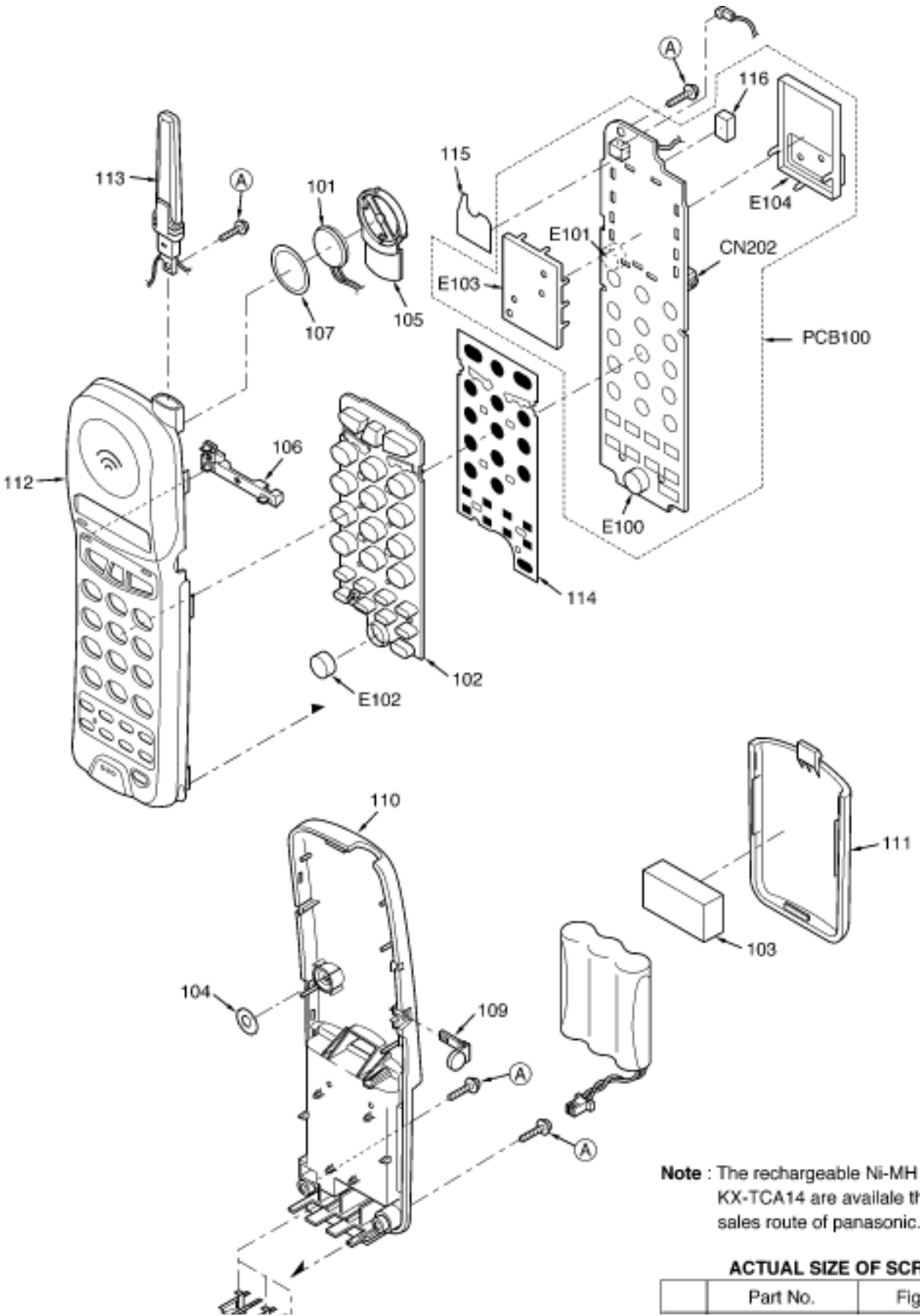


Ⓓ	XTW26+8P	
Ⓔ	XTW3+S12P	

TOP PREVIOUS NEXT

34 CABINET AND ELECTRICAL PARTS (Handset)

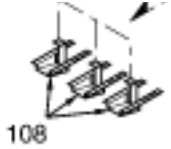
TOP PREVIOUS NEXT



Note : The rechargeable Ni-MH battery KX-TCA14 are availale therough sales route of panasonic.

ACTUAL SIZE OF SCREWS

	Part No.	Figure



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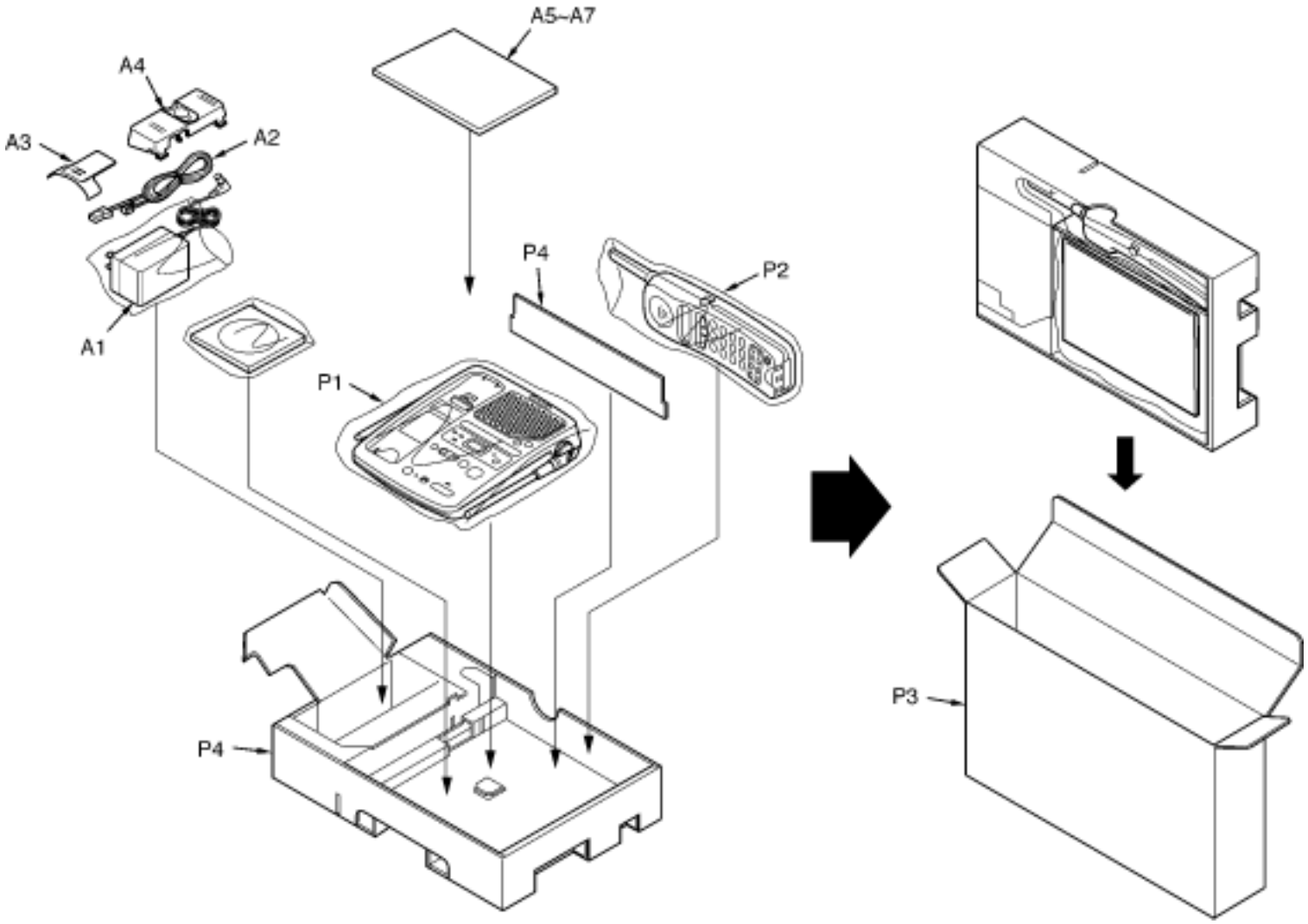
ACTUAL SIZE OF SCREWS

	Part No.	Figure
Ⓐ	XTW26+12P	

TOP PREVIOUS NEXT

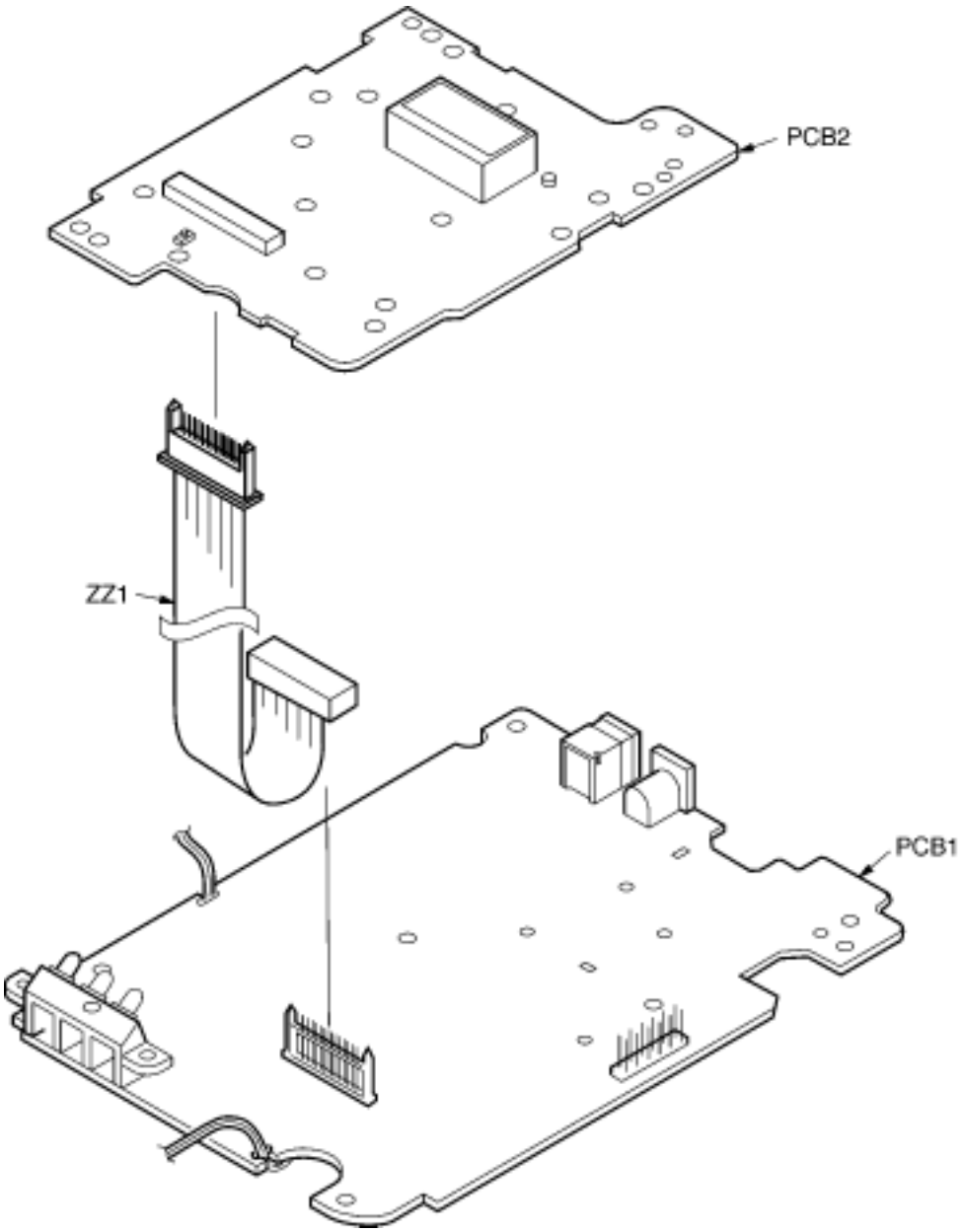
35 ACCESSORIES AND PACKING MATERIALS

TOP PREVIOUS NEXT



TOP PREVIOUS NEXT

36 TOOL



37 REPLACEMENT PARTS LIST

TOP PREVIOUS NEXT

This replacement parts list is only for the models : KX-TGM240-B.

Note:

1. RTL (Retention Time Limited)

   The marking (RTL) indicates that the Retention Time is limited for this item.

   After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws govering parts and product retention.

   At the end of this period, the assembly will no longer be available.

2. Important safety notice/Components identified by the mark indicates special characteristics important for safety. When replacing any of these components, only use specifiedmanufacture's parts.

3. The S mark indicates service standard parts and may differ from production parts.

4. RESISTORS& CAPACITORS/Unless otherwise specified;/All resistors are in ohms (Ω) K=1000Ω, M=1000kΩ/All capacitors are in MICRO FARADS (μF) P=μμF/*Type& Wattageof Resistor

Type

ERC:Solid ERD:Carbon PQRD:Carbon	ERX:Metal Film ERG:Metal Oxide ER0:Metal Film	PQ4R:Carbon ERS:Fusible Resistor ERF:Cement Resistor

Wattege

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor

Type

ECFD:Semi-Conductor ECQS:Styrol PQCUV:Chip ECQMS:Mica	ECCD,ECKD,ECBT,PQCBC:Ceramic ECQE,ECQV,ECQG:Polyester ECEA,ECSZ:Electlytic ECQP:Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H:50V 2A:100V 2E:250V 2H:500V	05:50V 1:100V 2:200V	0F:3.15V 1A:10V 1V:35V 0J:6.3V	0J :6.3V 1A :10V 1C :16V 1E,25:25V	1V :35V 50,1H:50V 1J :63V 2A :100V

37.1 Base Unit

37.2 Handset

37.3 KX-TGM240-B

TOP PREVIOUS NEXT

37.1 Base Unit

CABINET&ELECTRICAL PARTS

Ref. No.	Part No.	Part Name& Description	Remarks
1	PQKM10348Z1	UPPER CABINET	
2	PQYF10128L1	LOWER CABINET	
3	PQSX10077Z	SHEET SWITCH	
4	PQSX10078Z	SHEET SWITCH	
5	PQBC10265Z1	BUTTON	
6	PQBX10303Z	BUTTON	
7	PQBX10305Z	BUTTON	
8	PQBX10320Z	BUTTON	
9	PQGB10005Z	BADGE	
10	PQGP10140Y3	PANEL	
11	PQKE10072Z1	HANGER	S
12	PQAS65P36Y	SPEAKER	
13	PQSA10072Z	ANTENNA	
14	PQSA10073Z	ANTENNA	
15	PQHR10617Y	RF UNIT HOLDER	S
16	PQHX10858Z	SPACER	
17	PQQT11232Z	INDICATION LABEL	
18	PQQT11565Z	INDICATION LABEL	

MAIN P.C.BOARD PARTS

Ref. No.	Part No.	Part Name& Description	Remarks
PCB1	PQWP1GM240BH	P.C.BOARD ASS'Y (RTL)	
		(ICS)	
IC103	AN6183SAE1	IC	S
IC111	PQVINJM2360M	IC	
IC201	PQVI53MF5020		

IC301	PQVID6471A2	IC	
IC302	PQVIKM29N4TC	IC	
IC401	PQVIMX93002F	IC	
IC402	AN6123MS	IC	
IC501	AN6165SB	IC	
IC502	PQVIT4069UBF	IC	S
		(TRANSISTORS)	
Q24	2SB1416	TRANSISTOR(SI)	
Q101	2SA1627	TRANSISTOR(SI)	
Q102	2SD601R	TRANSISTOR(SI)	
Q103	2SD1994A	TRANSISTOR(SI)	
Q104	2SD2136	TRANSISTOR(SI)	
Q105	2SD2137	TRANSISTOR(SI)	
Q106	2SD2136	TRANSISTOR(SI)	
Q108	2SD1994A	TRANSISTOR(SI)	
Q109	2SD601R	TRANSISTOR(SI)	
Q110	2SD1991A	TRANSISTOR(SI)	
Q111	2SD1994A	TRANSISTOR(SI)	
Q112	2SC2120	TRANSISTOR(SI)	
Q113	2SD601R	TRANSISTOR(SI)	
Q201	2SD601R	TRANSISTOR(SI)	
Q202	2SB709A	TRANSISTOR(SI)	
Q203	2SD601R	TRANSISTOR(SI)	
Q401	2SD601R	TRANSISTOR(SI)	
Q403	2SD1819A	TRANSISTOR(SI)	
Q500	2SD1819A	TRANSISTOR(SI)	
Q502	2SD601R	TRANSISTOR(SI)	
Q503	2SD601R	TRANSISTOR(SI)	
Q506	2SD601R	TRANSISTOR(SI)	
Q507	PQVTDTC143TK	TRANSISTOR(SI)	
Q508	2SD601R	TRANSISTOR(SI)	
Q510	2SD601R	TRANSISTOR(SI)	
Q511	2SD601R	TRANSISTOR(SI)	

Q512	2SD1819A	TRANSISTOR(SI)	
Q513	2SD601R	TRANSISTOR(SI)	
Q514	2SD1819A	TRANSISTOR(SI)	
Q590	2SD601R	TRANSISTOR(SI)	
		(DIODES)	
D101	PQVDS1ZB40F1	DIODE(SI)	S
D102	1SS119	DIODE(SI)	
D103	MA4180	DIODE(SI)	
D104	MA4036	DIODE(SI)	
D105	MA4100	DIODE(SI)	
D106	PQVDS5688G	DIODE(SI)	
D107	MA4068	DIODE(SI)	
D108	MA4150	DIODE(SI)	
D109	MA4150	DIODE(SI)	
D110	MA4150	DIODE(SI)	
D111	PQVDS5688G	DIODE(SI)	
D113	MA4068	DIODE(SI)	
D114	PQVDS5688G	DIODE(SI)	
D116	PQVDS5688G	DIODE(SI)	
D117	1SS119	DIODE(SI)	
D118	1SS119	DIODE(SI)	
D119	MA4056	DIODE(SI)	
D120	PQVDS5688G	DIODE(SI)	
D121	PQVDS5688G	DIODE(SI)	
D124	PQVDS5688G	DIODE(SI)	
D125	1SS119	DIODE(SI)	
D126	1SS119	DIODE(SI)	
D127	PQVDS5688G	DIODE(SI)	
D131	PQVDEC10	DIODE(SI)	
D142	MA4100	DIODE(SI)	
D143	MA4068	DIODE(SI)	
D202	1SS119	DIODE(SI)	
D203	1SS119	DIODE(SI)	

D204	1SS119	DIODE(SI)	
D205	1SS119	DIODE(SI)	
D206	MA4047	DIODE(SI)	
D401	MA4068	DIODE(SI)	
D402	MA4068	DIODE(SI)	
D403	MA153	DIODE(SI)	
D502	1SS119	DIODE(SI)	
D503	1SS119	DIODE(SI)	
D504	1SS119	DIODE(SI)	
		(COILS AND TRANSFORMERS)	
L101	PQLQZM2R2K	COIL	
L102	PQLQZM2R2K	COIL	
L103	PQLQZM2R2K	COIL	
L104	PQLQZM100K	COIL	
L105	PQLQZM2R2K	COIL	
L106	PQLQXF1R5K	COIL	
L111	ELC10E331	COIL	
L201	PQLQZM100K	COIL	
L301	PQLQZM100K	COIL	
L402	PQLQZM2R2K	COIL	
L403	PQLQZM2R2K	COIL	
T101	PQLT3E3A	I.F. TRANSFORMER	⚠
T102	PQLT3E3A	I.F. TRANSFORMER	⚠
		(VARISTORS)	
SA101	PQVDDSS301L	VARISTOR	
SA102	PQVDDSP272MR	VARISTOR	⚠
		(VARIABLE RESISTORS)	
VR501	EVNDXAA03B24	VARIABLE RESISTOR	
VR502	EVNDXAA03B15	VARIABLE RESISTOR	

		(CRYSTAL OSILLATORS)	
X201	PQVCK7952N4Z	CRYSTAL OSCILLATOR	
X202	PQVCL3276N6Z	CRYSTAL OSCILLATOR	
X301	PQVCK3686N4Z	CRYSTAL OSCILLATOR	
		(PHOTO COUPLERS)	
PC101	PQVIPS25051P	PHOTO ELECTRIC TRANSDUCER	
PC102	PQVITLP627	PHOTO ELECTRIC TRANSDUCER	
PC103	PQVIPC817CD	PHOTO ELECTRIC TRANSDUCER	
PC104	PQVIPC817CD	PHOTO ELECTRIC TRANSDUCER	
		(POSISTOR)	
PO101	PQRPAR390N	POSISTOR	
		(JACKS)	
JJ101	PQJJ1T008Y	JACK, TEL	
JJ103	PQJJ1T022Z	JACK, DC IN	
		(CONNECTORS)	
CN201	PQJP14B55Z	CONNECTOR	
CN600	PQJP24B73Z	CONNECTOR	
		(ELECTRICAL PARTS)	
E1	PQJM122Z	MICROPHONE	
E2	PQMG10020Z	SPACER	
JJ102	PQJT10147Y	CHARGE TERMINAL	
		(RESISTORS)	
R41	PQ4R18XJ000	0	

R42	PQ4R10XJ101	100	
R43	PQ4R18XJ821	820	
R44	PQ4R10XJ823	82K	
R45	PQ4R10XJ000	0	
R46	PQ4R10XJ473	47K	
R47	ERJ3GEYJ153	15K	
R61	ERJ3GEYJ272	2.7K	
R101	ERDS2TJ473	47K	
R102	ERDS2TJ104	100K	
R103	ERDS2TJ472	4.7K	
R104	PQ4R10XJ563	56K	
R105	PQ4R10XJ153	15K	
R106	ERDS2TJ682	6.8K	
R107	PQ4R10XJ682	6.8K	
R108	ERDS2TJ560	56	
R109	ERDS2TJ221	220	
R111	PQ4R10XJ561	560	
R112	ERJ3GEYJ104	100K	
R113	ERJ3GEYJ103	10K	
R114	ERJ3GEYJ104	100K	
R115	ERDS2TJ153	15K	
R116	ERDS2TJ222	2.2K	
R117	ERDS2TJ221	220	
R118	ERDS2TJ333	33K	
R119	ERDS2TJ332	3.3K	
R120	ERJ3GEYJ473	47K	
R121	ERDS2TJ151	150	
R122	ERDS2TJ560	56	
R123	ERDS2TJ560	56	
R124	ERDS2TJ560	56	
R125	ERDS2TJ560	56	
R126	ERDS2TJ560	56	
R127	ERDS2TJ560	56	
R128	ERJ3GEYJ104	100K	

R129	ERJ3GEYJ222	2.2K	
R130	PQ4R10XJ821	820	
R131	PQ4R10XJ680	68	
R132	ERDS1TJ330	33	S
R133	PQ4R10XJ223	22K	
R134	PQ4R10XJ333	33K	
R135	PQ4R10XJ102	1K	
R136	PQ4R10XJ101	100	
R137	ERDS2TJ104	100K	
R138	ERJ3GEYJ102	1K	
R139	ERJ3GEYJ122	1.2K	
R140	ERJ3GEYJ103	10K	
R141	ERJ3GEYJ103	10K	
R142	PQ4R10XJ000	0	
R143	PQ4R10XJ124	120K	
R144	ERJ3GEYJ334	330K	
R145	PQ4R10XJ683	68K	
R146	ERJ3GEYJ393	39K	
R147	ERDS2TJ181	180	
R148	ERDS2TJ561	560	
R149	PQ4R10XJ561	560	
R152	ERJ3GEY0R00	0	
R202	ERJ3GEYJ106	10M	
R203	ERJ3GEYJ104	100K	
R205	ERJ3GEYJ123	12K	
R206	ERJ3GEYJ272	2.7K	
R207	ERJ3GEYJ222	2.2K	
R209	ERJ3GEYJ104	100K	
R210	ERJ3GEYJ104	100K	

Ref. No.	Part No.	Part Name& Description	Remarks
R211	ERJ3GEYJ104	100K	
R212	ERJ3GEYJ104	100K	
R219	ERJ3GEYJ684	680K	

R220	ERJ3GEYJ105	1M	
R221	ERJ3GEYJ334	330K	
R222	ERJ3GEYJ473	47K	
R223	ERJ3GEYJ224	220K	
R224	ERJ3GEYJ105	1M	
R225	ERJ3GEYJ563	56K	
R226	ERJ3GEYJ474	470K	
R227	ERJ3GEYJ563	56K	
R230	ERJ3GEYJ563	56K	
R301	ERJ3GEYJ222	2.2K	
R302	ERJ3GEYJ222	2.2K	
R303	ERJ3GEYJ222	2.2K	
R304	ERJ3GEYJ222	2.2K	
R305	ERJ3GEYJ222	2.2K	
R306	ERJ3GEYJ222	2.2K	
R307	ERJ3GEYJ222	2.2K	
R308	ERJ3GEYJ222	2.2K	
R309	ERJ3GEYJ222	2.2K	
R310	ERJ3GEYJ222	2.2K	
R311	ERJ3GEYJ222	2.2K	
R312	ERJ3GEYJ222	2.2K	
R313	PQ4R18XJ102	1K	
R314	PQ4R18XJ221	220	
R315	ERJ3GEYJ105	1M	
R316	ERJ3GEYJ181	180	
R317	ERJ3GEYJ472	4.7K	
R318	ERJ3GEYJ472	4.7K	
R319	ERDS2TJ393	39K	
R320	ERJ3GEYJ221	220	
R401	ERJ3GEYJ103	10K	
R402	ERJ3GEYJ202	2K	
R403	PQ4R10XJ274	270K	
R405	ERJ3GEYJ154	150K	
R406	ERJ3GEYJ682	6.8K	

R407	ERJ3GEYJ105	1M	
R408	ERJ3GEYJ103	10K	
R409	ERJ3GEYJ104	100K	
R410	ERJ3GEYJ333	33K	
R411	ERJ3GEYJ393	39K	
R412	ERJ3GEY0R00	0	
R413	ERJ3GEY0R00	0	
R416	ERJ3GEY0R00	0	
R417	ERJ3GEYJ104	100K	
R418	ERJ3GEYJ102	1K	
R419	ERJ3GEYJ561	560	
R420	PQ4R10XJ000	0	
R421	ERJ3GEYJ102	1K	
R422	ERJ3GEYJ102	1K	
R423	ERJ3GEYJ102	1K	
R424	ERJ3GEYJ103	10K	
R500	ERJ3GEYJ104	100K	
R501	ERJ3GEY0R00	0	
R502	ERJ3GEY0R00	0	
R503	ERJ3GEYJ104	100K	
R504	ERJ3GEY0R00	0	
R505	PQ4R10XJ332	3.3K	
R506	ERJ3GEYJ332	3.3K	
R507	ERJ3GEYJ103	10K	
R508	ERJ3GEYJ564	560K	
R509	ERJ3GEYJ681	680	
R510	ERJ3GEYJ104	100K	
R511	PQ4R10XJ472	4.7K	
R512	ERJ3GEYJ563	56K	
R513	ERJ3GEYJ123	12K	
R514	ERJ3GEYJ153	15K	
R515	ERJ3GEYJ153	15K	
R516	ERJ3GEY0R00	0	
R517	ERJ3GEYJ333	33K	

R518	ERJ3GEYJ333	33K	
R519	PQ4R10XJ333	33K	
R520	ERJ3GEYJ123	12K	
R521	ERJ3GEYJ103	10K	
R522	ERJ3GEY0R00	0	
R523	ERJ3GEYJ472	4.7K	
R524	ERDS2TJ333	33K	
R525	ERJ3GEYJ154	150K	
R526	ERJ3GEYJ155	1.5M	
R527	ERJ3GEYJ154	150K	
R528	ERJ3GEY0R00	0	
R530	PQ4R10XJ394	390K	
R531	ERJ3GEY0R00	0	
R532	ERJ3GEY0R00	0	
R535	ERJ3GEY0R00	0	
R539	ERJ3GEYJ154	150K	
R540	PQ4R10XJ223	22K	
R541	ERJ3GEYJ105	1M	
R542	ERJ3GEYJ473	47K	
R543	ERJ3GEYJ333	33K	
R544	ERJ3GEYJ105	1M	
R545	ERJ3GEYJ823	82K	
R546	ERJ3GEYJ472	4.7K	
R547	ERJ3GEYJ124	120K	
R548	ERJ3GEYJ102	1K	
R549	ERJ3GEY0R00	0	
R550	ERDS2TJ333	33K	
R551	ERJ3GEYJ104	100K	
R552	ERJ3GEY0R00	0	
R553	ERJ3GEY0R00	0	
R554	ERJ3GEYJ184	180K	
R555	ERJ3GEYJ102	1K	
R556	ERJ3GEYJ392	3.9K	
R557	ERJ3GEYJ473	47K	

R559	ERDS2TJ333	33K	
R561	ERJ3GEYJ103	10K	
R562	ERJ3GEYJ472	4.7K	
R563	ERJ3GEYJ824	820K	
R564	ERJ3GEYJ681	680	
R565	ERJ3GEYJ393	39K	
R566	PQ4R10XJ820	82	
R567	ERJ3GEYJ561	560	
R568	ERJ3GEYJ473	47K	
R569	ERJ3GEYJ563	56K	
R570	ERJ3GEYJ222	2.2K	
R571	ERJ3GEYJ222	2.2K	
R572	ERJ3GEYJ684	680K	
R573	ERJ3GEYJ680	68	
R581	ERJ3GEYJ332	3.3K	
R582	ERJ3GEYJ474	470K	
R583	ERJ3GEYJ683	68K	
R584	ERJ3GEYJ474	470K	
R586	ERJ3GEY0R00	0	
R588	ERJ3GEY0R00	0	
R596	ERJ3GEYJ563	56K	
R597	ERJ3GEYJ333	33K	
R598	ERJ3GEYJ181	180	
R599	ERJ3GEYJ392	3.9K	
R600	ERJ3GEYJ153	15K	
R601	ERJ3GEY0R00	0	
R602	ERJ3GEYJ224	220K	
R603	ERJ3GEYJ472	4.7K	
R801	ERJ3GEYJ104	100K	
R802	ERJ3GEYJ104	100K	
C409	PQ4R10XJ000	0	
C426	ERJ3GEY0R00	0	
C428	ERJ3GEY0R00	0	
C505	ERJ3GEYJ822	8.2K	

C528	ERJ3GEY0R00	0	
C529	ERJ3GEY0R00	0	
C530	PQ4R10XJ000	0	
C586	PQ4R10XJ000	0	
C591	PQ4R10XJ000	0	
C598	ERJ3GEY0R00	0	
		(CAPACITORS)	
C42	PQCUV1H101JC	100P	
C43	ECEA1VKS4R7	4.7	S
C44	ECEA1AU221	220	
C56	ECEA1AU221	220	
C101	ECQE2E224JZ	0.22	S
C102	ECKD2H681KB	680P	S
C103	ECKD2H681KB	680P	S
C104	ECEA1CU221	220	
C105	PQCUV1H103KB	0.01	
C106	ECEA1HKS2R2	2.2	S
C107	PQCUV1H103KB	0.01	
C108	ECUV1H821KBV	820P	
C109	PQCUV1E104MD	0.1	S
C110	ECEA1CU221	220	
C111	PQCUV1H102J	0.001	S
C112	PQCUV1H103KB	0.01	
C113	PQCUV1H103KB	0.01	
C114	ECEA1EU101	100	
C118	ECEA1CKS220	22	S
C119	PQCUV1H103KB	0.01	
C120	ECEA1EK470	47	S
C121	ECEA1CKS220	22	S
C122	PQCUV1H331JC	330P	
C123	ECEA1CKS100	10	S
C124	ECEA1CKS220	22	S
C125	ECKWKH332ME	0.0033	

C126	ECEA1AKA221	220	
C127	PQCUV1E104MD	0.1	S
C131	ECEA1AKA221	220	
C132	PQCUV1E104MD	0.1	S
C133	PQCUV1E104MD	0.1	S
C134	PQCUV1E104MD	0.1	S
C135	PQCUV1E104MD	0.1	S
C141	PQCUV1E104MD	0.1	S
C142	ECEA1CU221	220	
C143	ECEA1CKS220	22	S
C144	ECUV1H102KBV	0.001	
C201	ECUV1H220JCV	22P	
C202	ECUV1H220JCV	22P	
C203	ECUV1H180JCV	18P	
C204	ECUV1H180JCV	18P	
C205	PQCUV1E104MD	0.1	S
C206	ECUV1H272KBV	0.0027	
C207	ECUV1H333KDV	0.033	S
C208	EECW5R5D473	0.047	S
C209	PQCUV1C334ZF	0.33	
C210	ECUV1C104KBV	0.1	
C211	ECEA1AKA221	220	
C301	ECUV1H470JCV	47P	
C302	ECUV1H681JCV	680P	S
C303	ECUV1H470JCV	47P	
C304	ECUV1H470JCV	47P	
C305	ECUV1H470JCV	47P	
C306	ECUV1H470JCV	47P	
C307	ECUV1H470JCV	47P	
C308	ECUV1H470JCV	47P	
C309	ECUV1H470JCV	47P	
C310	ECUV1H470JCV	47P	
C311	ECUV1H470JCV	47P	
C312	ECUV1H470JCV	47P	

C313	ECUV1H102KBV	0.001	
C314	ECUV1H470JCV	47P	
C315	ECUV1H120JCV	12P	
C316	ECUV1H120JCV	12P	
C317	PQCUV1E104MD	0.1	S
C319	ECUV1H102KBV	0.001	
C320	PQCUV1E104MD	0.1	S
C321	EECW5R5D473	0.047	S
C322	ECUV1C104ZFV	0.1	
C323	ECUV1C104KBV	0.1	
C324	ECUV1C104ZFV	0.1	
C325	ECUV1C104ZFV	0.1	
C326	ECUV1C104ZFV	0.1	
C401	ECUV1H471JCV	470P	S
C402	ECUV1H472KBV	0.0047	
C403	ECUV1C104ZFV	0.1	
C404	ECUV1C104ZFV	0.1	
C405	ECUV1C104ZFV	0.1	
C406	ECUV1H223KBV	0.022	S
C407	ECEA1HKS010	1	S
C408	ECEA0JKA331	330	
C410	ECUV1C104KBV	0.1	
C411	PQCUV1H472KB	0.0047	
C412	ECEA1CKS100	10	S
C413	ECUV1H472KBV	0.0047	
C414	ECUV1H472KBV	0.0047	
C415	PQCUV1E104MD	0.1	S
C416	ECUV1C104ZFV	0.1	
C417	ECUV1C104ZFV	0.1	
C418	PQCUV1H103KB	0.01	
C419	PQCUV1H103KB	0.01	
C421	ECEA0JK221	220	S
C422	ECUV1C104KBV	0.1	
C423	ECUV1C104KBV	0.1	

C424	ECUV1H222KBV	0.0022	
C425	ECEA1CKS100	10	S
C430	ECUV1C104KBV	0.1	
C431	ECUV1H471JCV	470P	S
C432	PQCUV1H182KB	0.0018	
C500	ECUV1H472KBV	0.0047	
C501	ECUV1C104KBV	0.1	
C502	PQCUV1C105ZF	1	
C503	ECUV1H101JCV	100P	
C504	PQCUV1H562KB	0.0056	
C506	ECUV1H681JCV	680P	S
C507	ECUV1H682KBV	0.0068	
C508	ECUV1H682KBV	0.0068	
C509	ECEA1HKS4R7	4.7	S
C510	ECEA1CKS100	10	S
C512	ECUV1H123KBV	0.012	
C513	ECUV1H392KBV	0.0039	
C514	ECUV1H182KBV	0.0018	
C515	ECUV1H221JCV	220P	
C516	ECEA1AU101	100	
C517	ECEA1CKS100	10	S
C518	ECEA1VKS4R7	4.7	S
C519	PQCUV1E104MD	0.1	S
C520	PQCUV1C105ZF	1	
C521	PQCUV1E104MD	0.1	S
C522	ECEA1CKS220	22	S
C523	ECUV1H332KBV	0.0033	
C524	PQCUV1E104MD	0.1	S
C526	ECUV1C683KBV	0.068	
C527	PQCUV1E104MD	0.1	S
C532	ECUV1H102KBV	0.001	
C533	ECUV1H101JCV	100P	
C535	PQCUV1E104MD	0.1	S
C536	ECUV1H472KBV	0.0047	

C538	ECUV1C104KBV	0.1	
C539	ECUV1H471JCV	470P	S
C540	ECUV1C104KBV	0.1	
C541	ECUV1C104KBV	0.1	
C542	ECUV1C104KBV	0.1	
C544	ECUV1H682KBV	0.0068	
C545	ECUV1H332KBV	0.0033	
C546	PQCUV1E104MD	0.1	S
C547	PQCUV1H471JC	470P	S
C550	ECUV1H331JCV	330P	S
C558	PQCUV1C683KB	0.068	
C559	ECUV1H153KBV	0.015	
C560	PQCUV1H271JC	270P	
C561	PQCUV1E104MD	0.1	S
C562	PQCUV1H271JC	270P	
C563	ECEA1AU102	1000	
C564	ECEA1CKS100	10	S
C565	ECUV1C104KBV	0.1	
C566	ECUV1H101JCV	100P	
C580	ECEA1AU221	220	
C581	PQCUV1C105ZF	1	
C582	PQCUV1H221JC	220P	
C583	PQCUV1E473MD	0.047	S
C584	PQCUV1H221JC	220P	
C590	PQCUV1E104MD	0.1	S
C596	ECUV1H123KBV	0.012	
C597	ECUV1H181JCV	180P	
C810	ECUV1H181JCV	180P	
C811	ECUV1H181JCV	180P	

OPERATIONAL P.C.BOARD PARTS

Ref. No.	Part No.	Part Name& Description	Remarks
PCB2	PQWP2GM240BH	PC BOARD ASS'Y (RTL)	

		(ICS)	
IC701	PQVIMC4094BF	IC	
IC702	PQVIMC4094BF	IC	
		(TRANSISTORS)	
Q701	2SD601R	TRANSISTOR(SI)	
Q702	2SD601R	TRANSISTOR(SI)	
Q703	2SD601R	TRANSISTOR(SI)	
		(DIODES)	
LED701	PQVDSLN210VC	LED	
LED702	LNJ301MPUJA	LED	
LED703	PQVDSLN210VC	LED	
		(CONNECTORS)	
CN701	PQJS14A36Z	CONNECTOR	
		(LCD)	
LCD701	PQADHLC7124	LIQUID CRYSTAL DISPLAY	
		(OTHER)	
E700	PQHR10552Z	LCD HOLDER	
		(RESISTORS)	
R701	PQ4R10XJ104	100K	S
R702	PQ4R10XJ681	680	S
R703	PQ4R10XJ331	330	S
R704	PQ4R10XJ331	330	S
R705	PQ4R10XJ223	22K	S

R706	PQ4R10XJ223	22K	S
R707	PQ4R10XJ223	22K	S
J701	PQ4R18XJ000	0	S
J702	PQ4R18XJ000	0	S
J703	PQ4R18XJ000	0	S
J704	PQ4R18XJ000	0	S
J705	PQ4R18XJ000	0	S
J706	PQ4R18XJ000	0	S
		(CAPACITORS)	
C701	ECST1AX106	10	
C702	PQCUV1E104MD	0.1	S

RF UNIT PARTS

Ref. No.	Part No.	Part Name& Description	Remarks
PCB3	PQLP10208Z	RF P.C.BORD ASS'Y (RTL)	
		(SCHIELD COVERS)	
E600	PQMC10285Z	SHIELD COVER	
E601	PQMC10286Z	SHIELD COVER	
E602	PQMC10312Z	SHIELD COVER	
E603	PQMC10313Z	SHIELD COVER	
E604	PQMC10319Z	SHIELD COVER	

TOP PREVIOUS NEXT

37.2 Handset

CABINET&ELECTRICAL PARTS

Ref. No.	Part No.	Part Name& Description	Remarks
101	PQAX2P05Z	SPEAKER	
102	PQBX10309X	BUTTON, KEY	
103	PQHE10084Z	SPONGE	
104	PQHG10512Z	SPACER	
105	PQHR10602Z1	SP HOLDER	
106	PQHR10611Z	LED PLATE	
107	PQHS10293Z	SP SPACER	
108	PQJT10145Z	BATTERY TERMINAL	
109	PQKE10075Z1	HEADSET JACK COVER	
110	PQKF10250X1	LOWER CABINET	
111	PQKK10087Z1	BATTERY COVER	
112	PQKM10333X3	UPPER CABINET	
113	PQSA10071Z	ANTENNA	
114	PQSX10082Z	SHEET SWITCH	
115	PQMC10314Z	SHIELD COVER	
116	PQHG10516Z	SPACER	

MAIN P.C.BOARD PARTS

Ref. No.	Part No.	Part Name& Description	Remarks
PCB100	PQWPTGM240BR	P.C.BOARD ASS'Y (RTL)	
		(ICS)	
IC200	MN151233KA1	IC	
IC202	AN6122FA	IC	
IC204	PQVITK11230M	IC	
IC301	PQVIM64078GP	IC	
IC302	PQVIMRF2006R	IC	

IC303	PQVIMC13143D	IC	
IC304	PQVTAT32063T	IC	
IC305	PQVIMRF0916T	IC	
IC311	PQVIPC8109TB	IC	
IC313	PQVITA31161F	IC	
IC401	PQVIPD961001	IC	
IC402	PQVINJM2901V	IC	
		(TRANSISTORS)	
Q201	2SD1819A	TRANSISTOR(SI)	
Q202	2SD1819A	TRANSISTOR(SI)	
Q203	PQVTDTB123E	TRANSISTOR(SI)	
Q204	PQVTDTC144TU	TRANSISTOR(SI)	
Q205	PQVTDTC144TU	TRANSISTOR(SI)	
Q206	PQVTDTC144TU	TRANSISTOR(SI)	
Q208	2SB1218A	TRANSISTOR(SI)	S
Q209	2SB1218A	TRANSISTOR(SI)	S
Q210	PQVTDTC143E	TRANSISTOR(SI)	
Q211	2SD1819A	TRANSISTOR(SI)	
Q301	2SC5408	TRANSISTOR(SI)	
Q302	PQVTD123J106	TRANSISTOR(SI)	S
Q303	2SC5408	TRANSISTOR(SI)	
Q304	PQVTD123J106	TRANSISTOR(SI)	S
Q305	2SC4536	TRANSISTOR(SI)	
Q312	2SC4098QT106	TRANSISTOR(SI)	
Q313	2SD1819A	TRANSISTOR(SI)	
Q314	2SD1819A	TRANSISTOR(SI)	
Q320	2SC4099NT106	TRANSISTOR(SI)	
Q321	2SC4099NT106	TRANSISTOR(SI)	
Q330	2SC4098QT106	TRANSISTOR(SI)	
Q331	2SC4098QT106	TRANSISTOR(SI)	
Q401	2SA1036KQ146	TRANSISTOR(SI)	S
Q404	PQVTDTC144TU	TRANSISTOR(SI)	

		(DIODES)	
D201	PQVDPTZTE25	DIODE(SI)	S
D202	PQVD1SR154	DIODE(SI)	
D203	PQVDRB751V4	DIODE(SI)	
D204	MA8150	DIODE(SI)	
D205	MA110	DIODE(SI)	
D206	MA141WK	DIODE(SI)	
D207	MA8150	DIODE(SI)	
D208	PQVDBR1112H	LED	
D209	PQVDPY1112H	LED	
D211	PQVDBR1112H	LED	
D212	PQVDPY1112H	LED	
D213	PQVDPY1112H	LED	
D214	PQVDPY1112H	LED	
D215	PQVDPY1112H	LED	
D216	PQVDPY1112H	LED	
D217	MA8150	DIODE(SI)	
D220	PQVDRB751V4	DIODE(SI)	
D221	PQVDRB751V4	DIODE(SI)	
D302	MA110	DIODE(SI)	
D303	MA110	DIODE(SI)	
		(COILS)	
L201	PQLQR3ER10K	COIL	
L202	PQLQR3ER10K	COIL	
L203	PQLQR3ER10K	COIL	
L305	PQLQR2M5N6S	COIL	
L306	PQLQR2M47NK	COIL	
L307	PQLQR2M1N5S	COIL	
L308	PQLQR2M10NK	COIL	
L309	PQLQR2M10NK	COIL	
L311	PQLQR2M8N2K	COIL	

L312	PQLQR2M2N2S	COIL	
L313	PQLQR2M2N2S	COIL	
L323	PQLQR2M1N2S	COIL	
L331	PQLQR2M2N7S	COIL	
L332	PQ4R10XJ151	150	
L335	PQLD4V1T	COIL	
L336	PQLQR2M100NK	COIL	
L337	PQLQR2M100NK	COIL	
L338	PQLQR2M100NK	COIL	
L341	PQLQR2M100NK	COIL	
L400	PQLQR2M4N7K	COIL	
L401	ECUV1H120JCV	12P	
L402	PQLQR2M10NK	COIL	
L403	ECUV1H010CCV	1P	
L497	PQLQR1S560JT	COIL	
L498	PQLQR1S560JT	COIL	
		(CERAMIC FILTERS)	
FL301	PQVFDFC32R44	CERAMIC FILTER	
FL311	PQVFMKFC5176	CERAMIC FILTER	
FL312	PQVFSFE10.8M	CERAMIC FILTER	
FL313	PQVFDFCR915P	CERAMIC FILTER	
		(CRYSTAL OSCILLATORS)	
RXVCO	PQV047Z	CRYSTAL OSCILLATOR	
TXVCO	PQV046Z	CRYSTAL OSCILLATOR	
X201	PQVBTCC3.99M	CRYSTAL OSCILLATOR	
X202	PQVCL3276N9Z	CRYSTAL OSCILLATOR	
X301	PQVCJ10240N2	CRYSTAL OSCILLATOR	
		(VARIABLE RESISTORS)	
VR202	EVN5ESX50B55	VARIABLE RESISTOR	

VR203	EVN5ESX50B15	VARIABLE RESISTOR	
VR204	EVN5ESX50B15	VARIABLE RESISTOR	
VR301	EVN5ESX50B15	VARIABLE RESISTOR	
VR302	EVN5ESX50B15	VARIABLE RESISTOR	
		(CONNECTORS)	
CN200	PQJP2D13Z	CONNECTOR	
CN240	PSJS01A01Z	CONNECTOR	
		(OTHERS)	
CHG(+)	PQJT10090Z	BATTERY TERMINAL	S
CHG(-)	PQJT10090Z	BATTERY TERMINAL	S
CHG(C)	PQJT10090Z	BATTERY TERMINAL	S
CN202	PQJJ1J007Z	JACK, HEADSET	
E100	PQJM122Z	MICROPHONE	
E101	PQEFBDB111GP	BUZZER	
E102	PQHE10106Z	MIC SPONGE	
E103	PQMC10285Z	MAGNETIC SHIELD	
E104	PQMC10286Z	MAGNETIC SHIELD	
VC301	PQCVTZB10ZA	TRIMMER CAPACITOR	
		(RESISTORS)	
R200	ERJ3GEY0R00	0	
R201	ERJ3GEYJ473	47K	
R203	ERJ3GEYJ103	10K	
R204	ERJ3GEYJ223	22K	
R205	ERJ3GEYJ103	10K	
R206	ERJ3GEYJ332	3.3K	
R207	ERJ3GEYJ100	10	
R208	ERJ3GEYJ103	10K	
R210	ERJ3GEYJ103	10K	
R211	ERJ3GEYJ332	3.3K	
R212	ERJ3GEYJ332	3.3K	

R213	ERJ3GEYJ472	4.7K	
R215	ERJ3GEYJ222	2.2K	
R216	ERJ3GEYJ103	10K	
R217	ERJ3GEYJ222	2.2K	
R218	ERJ3GEYJ224	220K	
R219	ERJ3GEYJ104	100K	
R220	ERJ3GEYJ104	100K	
R221	ERJ3GEYJ100	10	
R222	ERJ3GEYJ104	100K	
R223	ERJ3GEYJ224	220K	
R224	ERJ3GEYJ153	15K	
R225	ERJ3GEYJ153	15K	
R226	ERJ3GEYJ103	10K	
R227	ERJ3GEYJ103	10K	
R228	ERJ3GEYJ222	2.2K	
R230	ERJ3GEYJ102	1K	
R231	ERJ3GEYJ224	220K	
R232	ERJ3GEYJ224	220K	
R233	ERJ3GEYJ220	22	
R235	ERJ3GEYJ103	10K	
R236	ERJ3GEYJ274	270K	
R237	ERJ3GEYJ563	56K	
R238	ERJ3GEYJ273	27K	
R239	ERJ3GEYJ563	56K	
R240	ERJ3GEYJ102	1K	
R241	ERJ3GEYJ273	27K	
R242	ERJ3GEYJ273	27K	
R243	ERJ3GEYJ472	4.7K	
R244	ERJ3GEYJ224	220K	
R245	ERJ3GEYJ222	2.2K	
R246	ERJ3GEYJ100	10	
R247	ERJ3GEYJ103	10K	
R249	ERJ3GEYJ102	1K	
R250	ERJ3GEYJ102	1K	

R251	ERJ3GEYJ222	2.2K	
R252	ERJ3GEYJ105	1M	
R254	ERJ3GEYJ681	680	
R255	ERJ3GEYJ331	330	
R256	ERJ3GEYJ105	1M	
R257	ERJ3GEYJ681	680	
R258	MA110	DIODE (SI)	
R259	ERJ3GEYJ104	100K	
R260	ERJ3GEYJ104	100K	
R263	ERJ3GEYJ103	10K	
R270	ERJ3GEYJ331	330	
R271	ERJ3GEYJ331	330	
R272	ERJ3GEYJ331	330	
R273	ERJ3GEYJ331	330	
R274	ERJ3GEYJ331	330	
R293	ERJ3GEYJ330	33	
R295	ERJ3GEYJ330	33	
R296	ERJ3GEYJ103	10K	
R297	ERJ3GEYJ563	56K	
R298	ERJ3GEYJ333	33K	
R300	ERJ3GEYJ101	100	
R301	ERJ3GEYJ470	47	
R302	ERJ3GEYJ470	47	
R303	ERJ3GEYJ273	27K	
R304	ERJ3GEYJ821	820	

Ref. No.	Part No.	Part Name& Description	Remarks
R305	ERJ3GEYJ470	47	
R306	ERJ3GEYJ470	47	
R307	ERJ3GEYJ472	4.7K	
R308	ERJ3GEYJ470	47	
R309	ERJ3GEYJ470	47	
R310	ERJ3GEYJ823	82K	
R311	ERJ3GEYJ470	47	

R312	ERJ3GEYJ473	47K	
R314	ERJ3GEYJ221	220	
R315	ERJ3GEYJ101	100	
R317	ERJ3GEYJ153	15K	
R318	ERJ3GEYJ153	15K	
R319	ERJ3GEYJ821	820	
R320	ERJ3GEYJ223	22K	
R321	ERJ3GEYJ100	10	
R322	ERJ3GEYJ102	1K	
R323	ERJ3GEY0R00	0	
R324	ERJ3GEY0R00	0	
R325	ERJ3GEYJ104	100K	
R326	ERJ3GEYJ471	470	
R331	ERJ3GEYJ563	56K	
R332	ERJ3GEYJ470	47	
R333	ERJ3GEY0R00	0	
R334	ERJ3GEYJ680	68	
R336	ERJ3GEYJ681	680	
R337	ERJ3GEYJ102	1K	
R338	ERJ3GEYJ102	1K	
R339	ERJ3GEYJ223	22K	
R340	PQLQR2M10NK	COIL	
R341	ERJ3GEYJ220	22	
R342	PQLQR2M100NK	COIL	
R343	ERJ3GEYJ470	47	
R344	ERJ3GEYJ470	47	
R346	ERJ3GEYJ154	150K	
R349	ERJ3GEYJ102	1K	
R350	ERJ3GEYJ332	3.3K	
R351	ERJ3GEY0R00	0	
R352	ERJ3GEYJ824	820K	
R353	ERJ3GEYJ470	47	
R354	ERJ3GEYJ470	47	
R355	ERJ3GEYJ184	180K	

R356	ERJ3GEYJ270	27	
R357	ERJ3GEYJ103	10K	
R360	ERJ3GEYJ334	330K	
R361	ERJ3GEYJ472	4.7K	
R362	ERJ3GEYJ821	820	
R363	ERJ3GEYJ683	68K	
R364	ERJ3GEYJ272	2.7K	
R365	ERJ3GEYJ150	15	
R366	ERJ3GEYJ221	220	
R373	ERJ3GEYJ181	180	
R376	ERJ3GEYJ471	470	
R377	ERJ3GEYJ471	470	
R379	ERJ3GEYJ101	100	
R380	ERJ3GEYJ101	100	
R381	ERJ3GEYJ104	100K	
R382	ERJ3GEYJ823	82K	
R383	ERJ3GEYJ103	10K	
R384	ERJ3GEYJ103	10K	
R385	ERJ3GEYJ153	15K	
R386	ERJ3GEYJ104	100K	
R387	ERJ3GEYJ102	1K	
R389	ERJ3GEYJ275	2.7M	
R391	ERJ3GEYJ104	100K	
R392	ERJ3GEYJ823	82K	
R393	ERJ3GEYJ470	47	
R395	ERJ3GEYJ154	150K	
R396	ERJ3GEYJ393	39K	
R400	ERJ3GEYJ560	56	
R401	ERJ3GEY0R00	0	
R403	ERJ3GEY0R00	0	
R404	ERJ3GEY0R00	0	
R405	ERJ3GEY0R00	0	
R407	ERJ3GEYJ103	10K	
R408	ERJ3GEYJ474	470K	

R409	ERJ3GEY0R00	0	
R410	ERJ3GEY0R00	0	
R411	ERJ3GEY0R00	0	
R412	ERJ3GEY0R00	0	
R413	ERJ3GEYJ104	100K	
R414	ERJ3GEYJ470	47	
R415	ERJ3GEYJ470	47	
R416	ERJ3GEYJ224	220K	
R417	ERJ3GEYJ560	56	
R420	PQLQR1RM471	COIL	
R421	ERJ3GEYJ332	3.3K	
R426	ERJ3GEYJ101	100	
R440	ERJ3GEYJ332	3.3K	
R441	ERJ3GEY0R00	0	
R442	ERJ3GEY0R00	0	
R443	ERJ3GEY0R00	0	
R444	ERJ3GEYJ122	1.2K	
R445	ERJ3GEY0R00	0	
R450	ERJ3GEYJ473	47K	
R460	PQLQR2M2N2S	COIL	
R472	ERJ3GEY0R00	0	
R482	ERJ3GEYJ103	10K	
R483	ERJ3GEYJ102	1K	
R484	ERJ3GEYJ103	10K	
R492	ERJ3GEYJ153	15K	
C290	ERJ3GEYJ562	5.6K	
		(CAPACITORS)	
C201	PQCUV1H103KB	0.01	
C203	ECEV0JA331	330	
C204	ECUV1H103KBV	0.01	
C205	ECUV1H103KBV	0.01	
C206	ECEV0JV330	33	
C207	ECUV1H103KBV	0.01	

C208	ECUV1H102KBV	0.001	
C209	ECUV1H153KBV	0.015	
C210	ECUV1H010CCV	1P	
C211	ECUV1H103KBV	0.01	
C212	ECST0JY106	10	
C213	ECUV1H822KBV	0.0082	
C214	ECEV0JV330	33	
C216	PQCUV1C474ZF	0.47	
C217	ECUV1H1681JCV	680P	
C218	ECST0JY106	10	
C219	ECUV1C104ZFV	0.1	
C220	ECUV1E183KBV	0.018	
C221	PQCUV1C105ZF	1	
C222	ECUV1H103KBV	0.01	
C223	ECUV1A105ZFV	1	
C224	ECUV1A105ZFV	1	
C225	ECUV1H103KBV	0.01	
C226	ECUV1H103KBV	0.01	
C227	ECUV1C104ZFV	0.1	
C228	ECUV1H472KBV	0.0047	
C229	ECUV1H392KBV	0.0039	
C230	ECUV1C823KBV	0.082	
C231	ECUV1C563KBV	0.056	
C232	PQCUV1C105ZF	1	
C233	ECUV1C104KBV	0.1	
C234	ECUV1C104ZFV	0.1	
C235	PQCUV1H101JC	100P	
C236	ECUV1A105ZFV	1	
C237	ECUV1H471JCV	470P	
C238	ECUV1H472KBV	0.0047	
C239	ECUV1A474ZFV	0.47	
C240	ECUV1A105ZFV	1	
C241	ECUV1C393KDV	0.039	
C242	ECUV1H122KBV	0.0012	

C243	ECEV0JA331	330	
C244	ECUV1C104ZFV	0.1	
C245	ECUV1H102KBV	0.001	
C247	ECUV1C104ZFV	0.1	
C248	ECUV1H180JCV	18P	
C249	ECUV1H180JCV	18P	
C250	ECST0JY106	10	
C251	ECST0JY106	10	
C252	ECUV1H101JCV	100P	
C253	ECUV1H103KBV	0.01	
C254	ECUV1H122KBV	0.0012	
C255	ECUV1H822KBV	0.0082	
C256	ERJ3GEYJ102	1K	
C257	ECUV1H472KBV	0.0047	
C260	PQCUV1E104MD	0.1	S
C262	ECST0JY106	10	
C263	ECUV1C104ZFV	0.1	
C270	ECUV1A105ZFV	1	
C271	ECST0JY106	10	
C272	ECUV1C104ZFV	0.1	
C273	ECUV1C104ZFV	0.1	
C280	ECUV1C104KBV	0.1	
C291	ECUV1C104KBV	0.1	
C307	ECUV1H020CCV	2P	
C308	ECUV1H470JCV	47P	
C309	ECUV1H470JCV	47P	
C310	ECUV1H103KBV	0.01	
C311	ECUV1H470JCV	47P	
C312	ECUV1H470JCV	47P	
C313	ECUV1H030CCV	3P	
C317	ECUV1H470JCV	47P	
C318	ECUV1H470JCV	47P	
C319	ECUV1H030CCV	3P	
C320	ECUV1H470JCV	47P	

C321	ECUV1H470JCV	47P	
C324	ECUV1C104KBV	0.1	
C325	PQLQR2M1N2S	COIL	
C326	ECUV1H030CCV	3P	
C327	ECUV1H0R5CCV	0.5	
C328	ECUV1H030CCV	3P	
C329	ECUV1H0R5CCV	0.5	
C330	ECUV1H080DCV	8P	
C332	ECUV1H030CCV	3P	
C333	ECUV1H080DCV	8P	
C334	ECUV1H010CCV	1P	
C336	PQLQR2M10NK	COIL	
C337	ECUV1H030CCV	3P	
C338	ECUV1H101JCV	100P	
C339	ECUV1H030CCV	3P	
C344	ECUV1H020CCV	2P	
C345	ECUV1H070DCV	7P	
C347	ECUV1H070DCV	7P	
C348	ECUV1H030CCV	3P	
C350	ECUV1H070DCV	7P	
C352	ECUV1H040CCV	4P	
C353	ECUV1H270JCV	27P	
C354	ECUV1A105ZFV	1	
C355	ECST0JX336	33	
C357	PQCUV1E104MD	0.1	
C358	ECUV1H102KBV	0.001	
C361	ECUV1H270JCV	27P	
C362	ECST0GC157	150	
C363	ECUV1H680JCV	68P	
C364	ECUV1H070DCV	7P	
C365	ECUV1H470JCV	47P	
C368	ECUV1H0R5CCV	0.5	
C370	ECUV1H103KBV	0.01	
C371	ECST0JX336	33	

C374	ECUV1H470JCV	47P	
C376	ECUV1H040CCV	4P	
C377	ECUV1H101JCV	100P	
C378	PQCUV1C224KB	0.22	
C379	ECUV1H682KBV	0.0068	
C380	ECUV1H332KBV	0.0033	
C381	ECUV1H101JCV	100P	
C382	ECUV1H103KBV	0.01	
C383	ECST1AY106	10	
C384	ECUV1H820JCV	82P	
C385	ECUV1H120JCV	12P	
C386	ECUV1H470JCV	47P	
C391	ECUV1H103KBV	0.01	
C392	ECST0JY106	10	
C401	ECUV1H103KBV	0.01	
C405	ECUV1H103KBV	0.01	
C406	ECUV1H030CCV	3P	
C407	ECUV1H472KBV	0.0047	
C408	ECUV1H472KBV	0.0047	
C409	ECUV1C104ZFV	0.1	
C410	ECST0GY156	15	
C411	ECUV1C104KBV	0.1	
C412	ECUV1H103KBV	0.01	
C413	ECUV1H100DCV	10P	
C414	ECUV1H220JCV	22P	
C415	ECUV1H101JCV	100P	
C416	ECUV1H101JCV	100P	
C417	ECUV1H103KBV	0.01	
C418	ECUV1H101JCV	100P	
C419	ECUV1H103KBV	0.01	
C420	ECUV1C334ZFV	0.33	
C421	ECUV1H332KBV	0.0033	
C422	ECUV1H332KBV	0.0033	
C423	ECUV1H680JCV	68P	

C424	ECUV1H333KDV	0.033	S
C426	ECUV1H100DCV	10P	
C427	ECUV1C334ZFV	0.33	
C429	ECUV1H152KBV	0.0015	
C430	PQCUV1C105ZF	1	
C431	ECUV1C104KBV	0.1	
C432	ECUV1A105ZFV	1	
C433	ECUV1H152KBV	0.0015	
C434	ECUV1C104KBV	0.1	
C436	ECUV1H103KBV	0.01	
C437	ECUV1H100DCV	10P	
C438	ECUV1C104KBV	0.1	
C449	ECUV1H103KBV	0.01	
C450	ECUV1H010CCV	1P	
C451	ECUV1H070DCV	7P	
C452	ECUV1C563KBV	0.056	
C453	ECST0JY106	10	
C461	ERJ3GEY0R00	0	
C462	ECUV1H470JCV	47P	
C463	ECUV1H470JCV	47P	
C470	ECUV1C104ZFV	0.1	
C471	ECUV1C104ZFV	0.1	
C472	ECUV1C104ZFV	0.1	
C476	ECST0JX336	33	
C477	ECUV1H103KBV	0.01	
C478	ECUV1H103KBV	0.01	
C484	ERJ3GEY0R00	0	
C495	ECST0GY156	15	
C496	ECUV1H152KBV	0.0015	
C497	ECUV1H152KBV	0.0015	
C499	ECUV1C104KBV	0.1	
C500	ECUV1H101JCV	100P	
C501	ECUV1H820JCV	82P	
C502	ECUV1H103KBV	0.01	

C503	ECUV1H103KBV	0.01	
C504	ECUV1H100DCV	10P	
C505	ECUV1H010CCV	1P	
C506	ECUV1C104ZFV	0.1	
C507	ECUV1C104ZFV	0.1	
C508	ECUV1H102KBV	0.001	
C510	ECUV1H040CCV	4P	
C511	ECUV1H040CCV	4P	
C512	ECUV1H040CCV	4P	
C591	ECUV1H020CCV	2P	
C592	ECUV1H0R5CCV	0.5	

TOP PREVIOUS NEXT

37.3 KX-TGM240-B

TOP PREVIOUS

Ref. No.	Part No.	Part Name& Description	Remarks
		ACCESSORIES	
A1	KX-A11-6	AC ADAPTOR	S
A2	PQJA10075Z	TEL CORD	
A3	PQKE10073Z1	BELT CLIP	
A4	PQKL24Z0	WALL MOUNT BLACKET	S
A5	PQQW11971Z	QUICK REFERENCE GUIDE	
		(English)	
A6	PQQW11972Z	QUICK REFERENCE GUIDE	
		(Spanish)	
A7	PQQX11978Z	INSTRUCTION BOOK	
		PACKING MATERIALS	
P1	PQPP170Z	PROTECTION COVER	
		(for Base Unit)	
P2	XZB10X35A02	PROTECTION COVER	
		(for Handset)	
P3	PQPK12573Z	GIFT BOX	
P4	PQPN10639Z	CUSHION	
		TOOLS	
ZZ1	PQZZ14K8Z	EXTENSION CORD	

Note

PQZZ16K5Z is useful for servicing (it makes servicing easy).

TOP PREVIOUS